

A schematic diagram of a light source system. A light source (1101) emits light (1102) which is reflected by a mirror (1103) and focused by a lens (1104) onto a mask (1105). The light then passes through the mask and is reflected by another mirror (1106) onto a substrate (1107). The substrate is mounted on a stage (1108) which is supported by a column (1111). The stage is also equipped with a sensor (1109) and a detector (1110).

FIG. 1 PRIOR ART

FIG.2A  
PRIOR ART

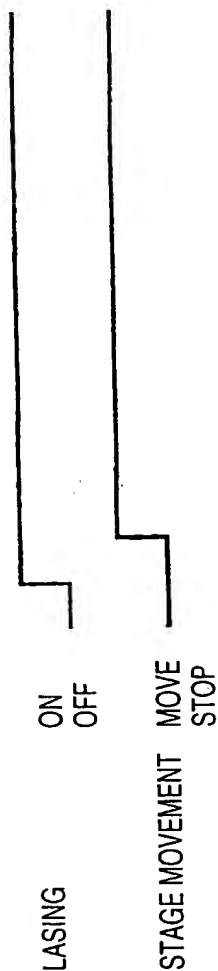


FIG.2B  
PRIOR ART

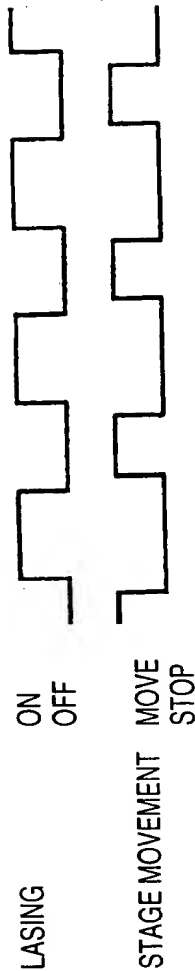


FIG.2C  
PRIOR ART

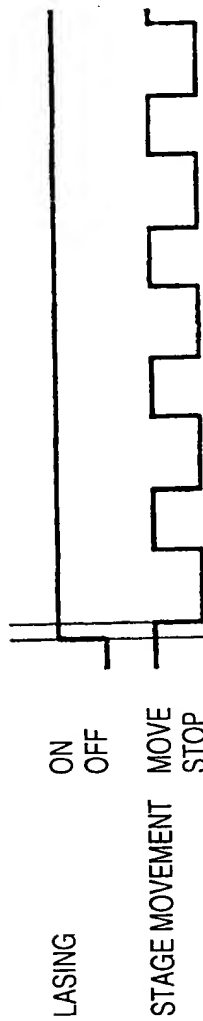
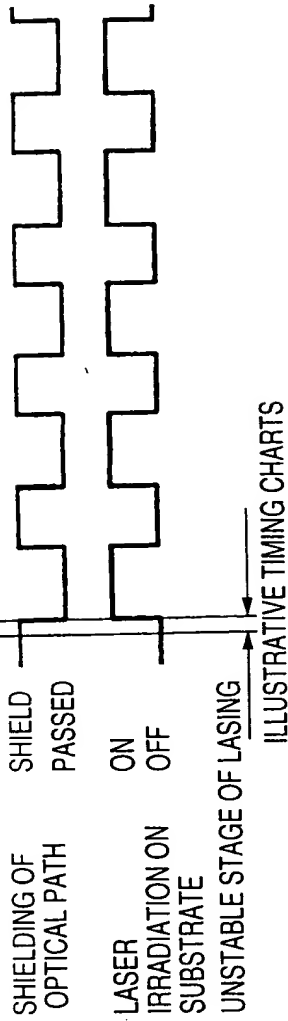


FIG.2D  
PRIOR ART



ILLUSTRATIVE TIMING CHARTS

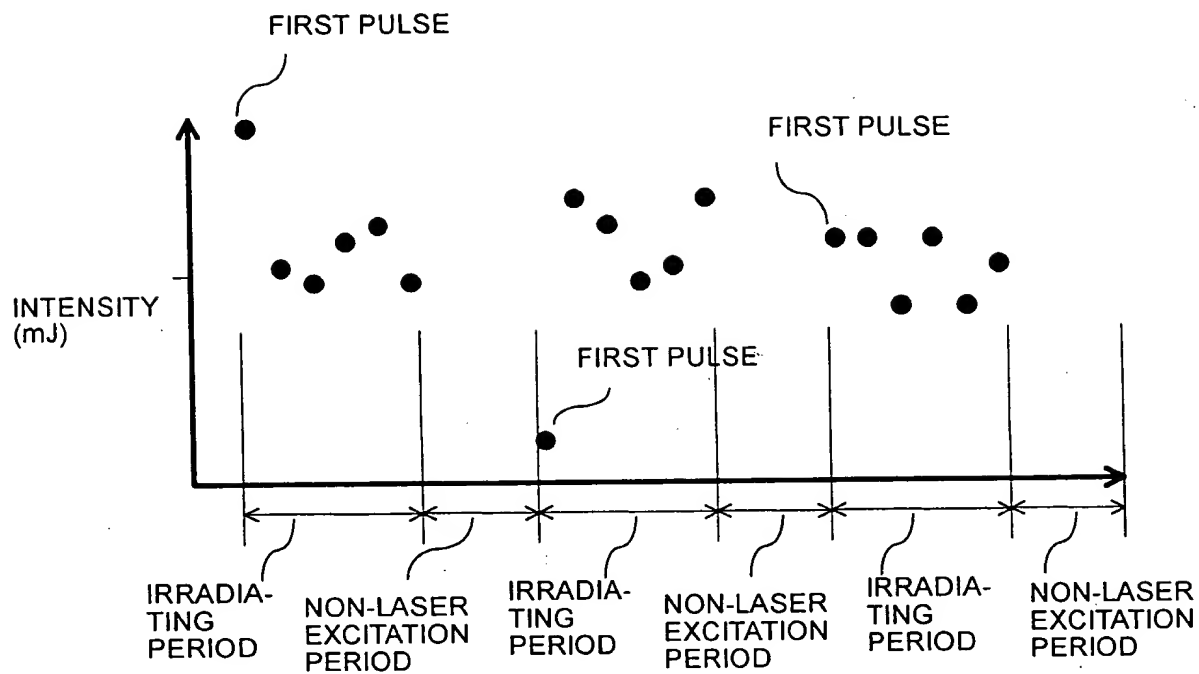


FIG. 3

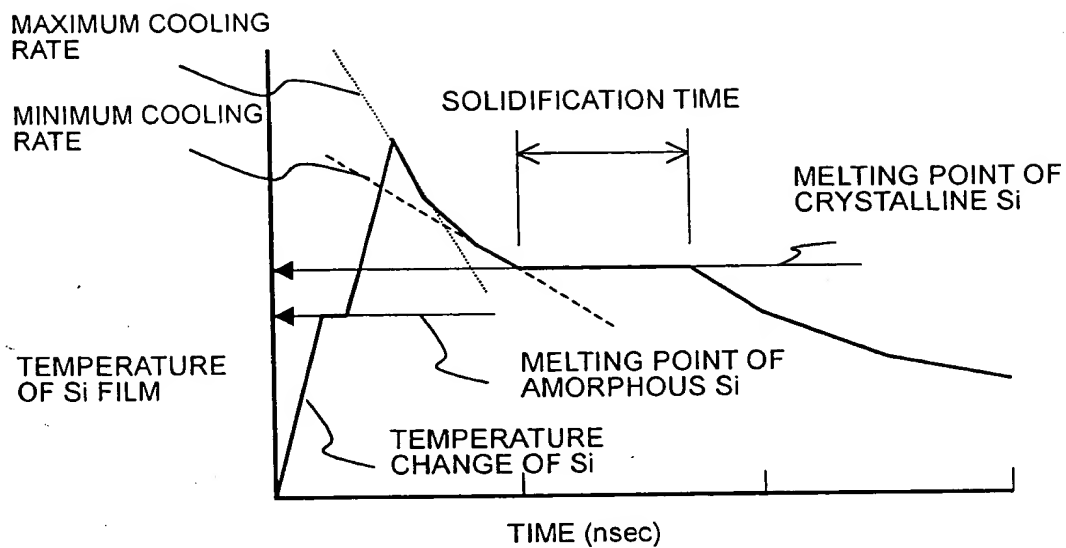
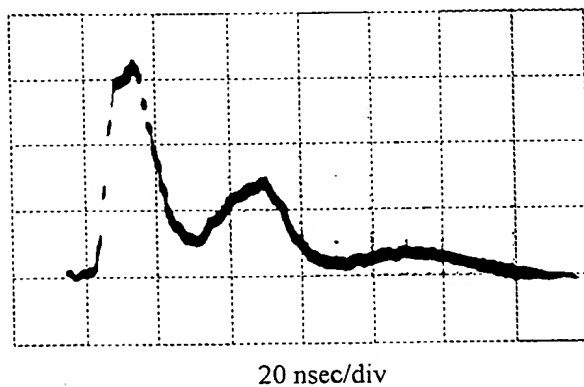
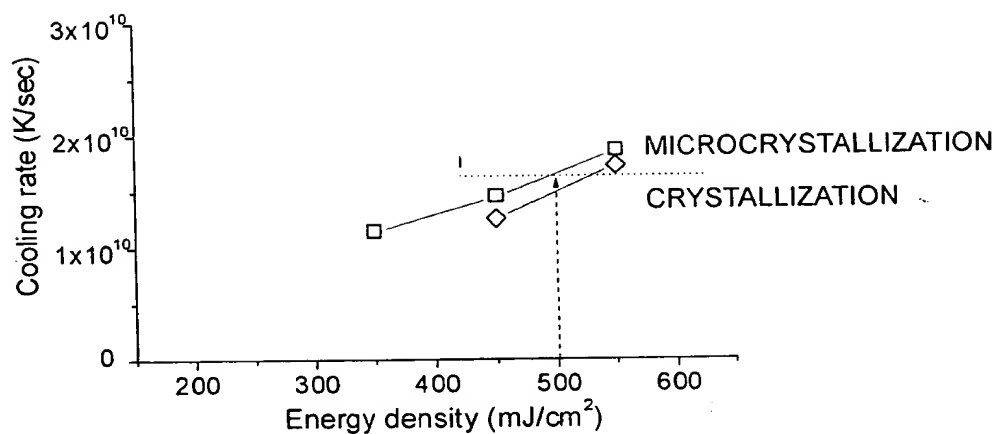


FIG. 4



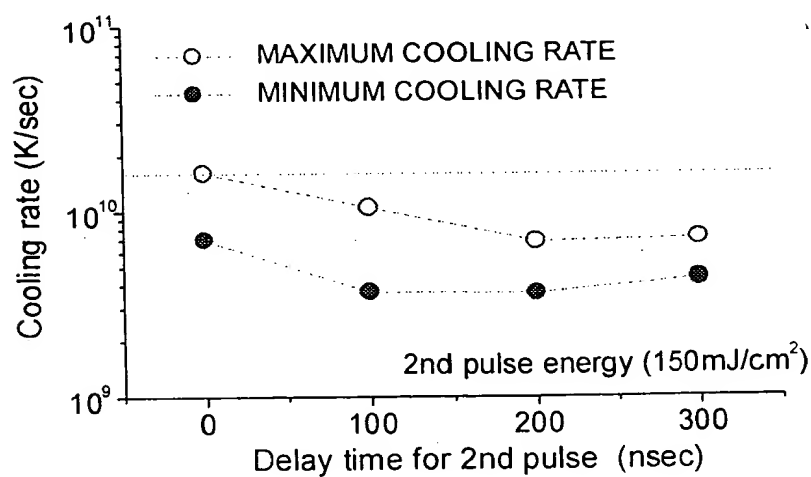
ILLUSTRATIVE LASER PULSE SHAPE

FIG. 5



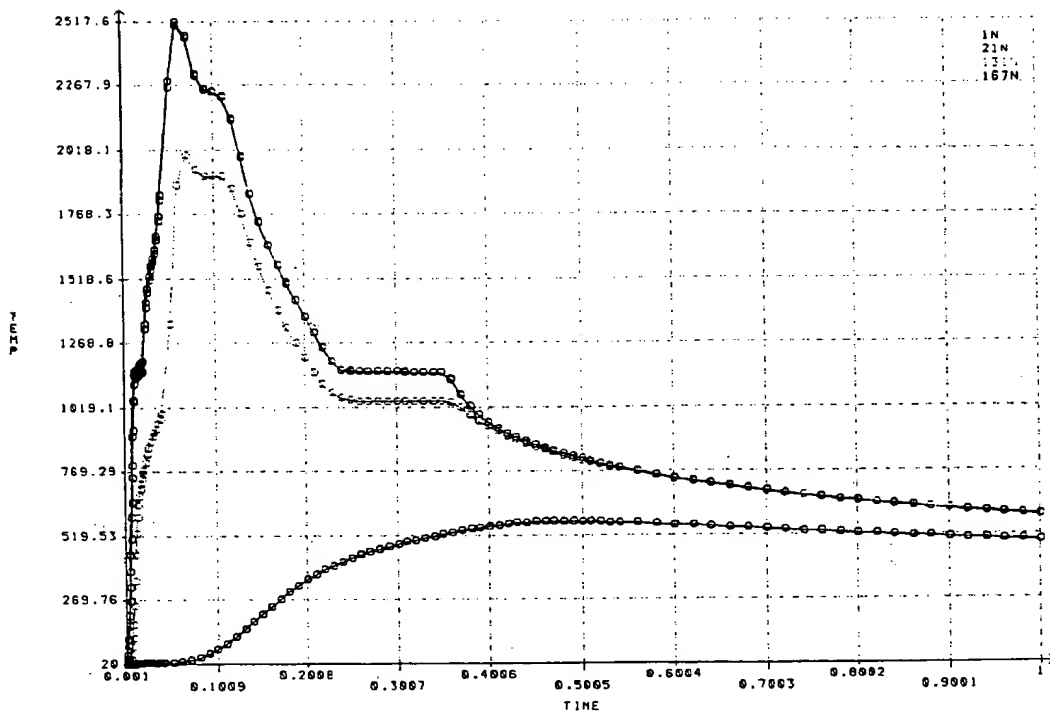
RELATIONSHIP BETWEEN IRRADIATION INTENSITY AND COOLING RATE, AND COOLING RATE AT WHICH THE MATERIAL BECOMES AMORPHOUS

FIG. 6



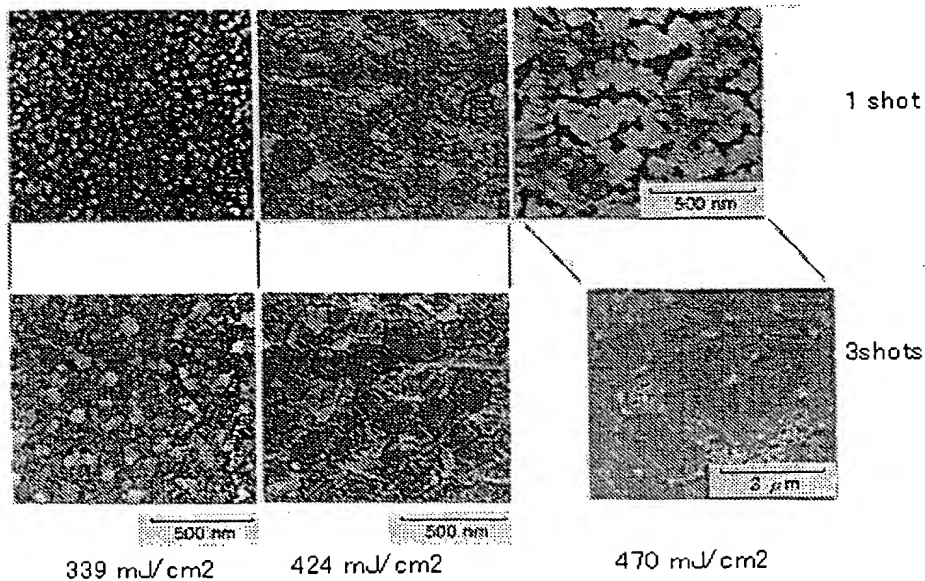
RELATIONSHIP BETWEEN MAXIMUM COOLING RATE AFTER APPLICATION OF SECOND PULSE AND THE COOLING RATE IN THE VICINITY OF SOLIDIFICATION POINT

FIG. 9



TEMPERATURE OF SILICON THIN FILM 75nm THICK ON A  $\text{SiO}_2$  SUBSTRATE IRRADIATED AT AN INTENSITY OF  $450\text{mJ}/\text{cm}^2$  BY XeCL LASER (WAVELENGTH: 308nm)

FIG. 7



ELECTRON MICROSCOPIC PHOTOGRAPHS OF LASER-INDUCED CRYSTALLIZED FILMS AFTER ZERO-ETCHING RELATIVE TO IRRADIATION INTENSITY AND NUMBER OF IRRADIATION TIME

FIG. 8

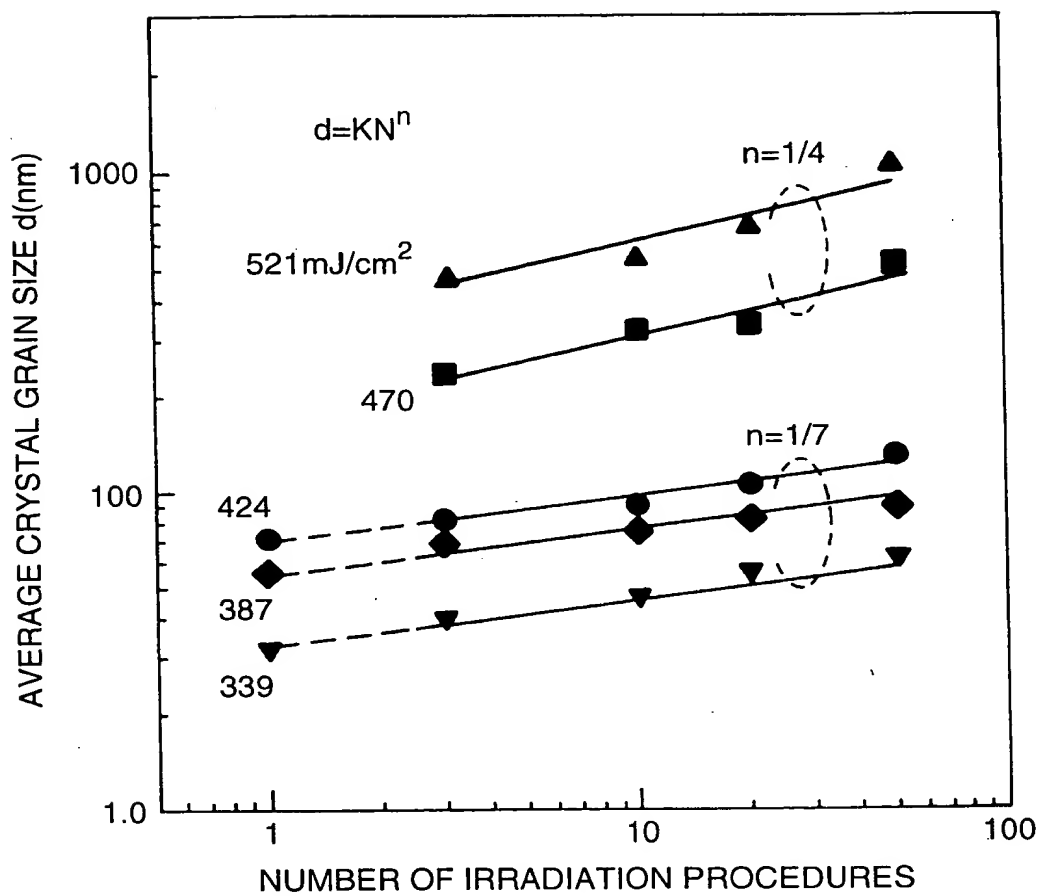


FIG.10

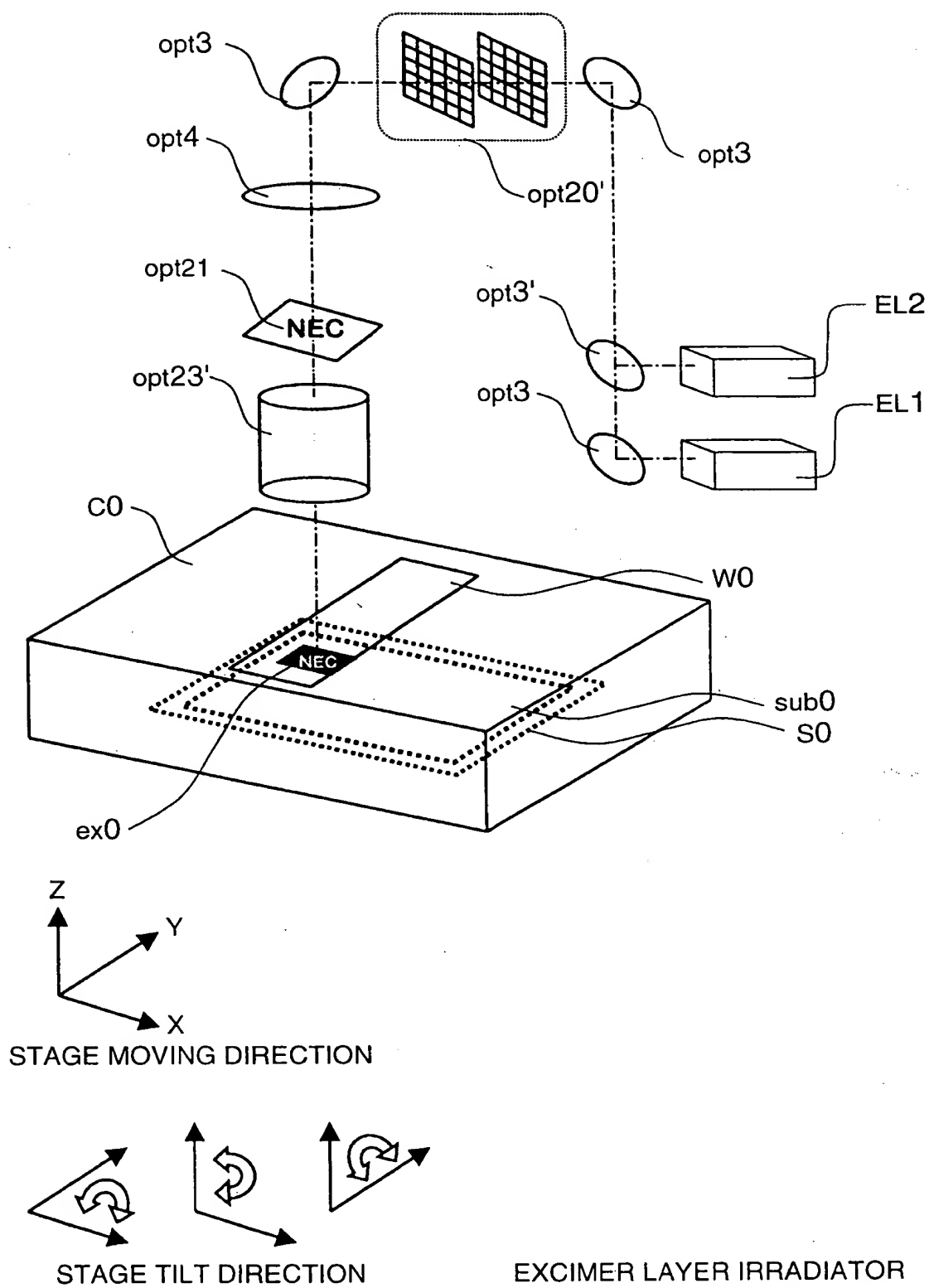
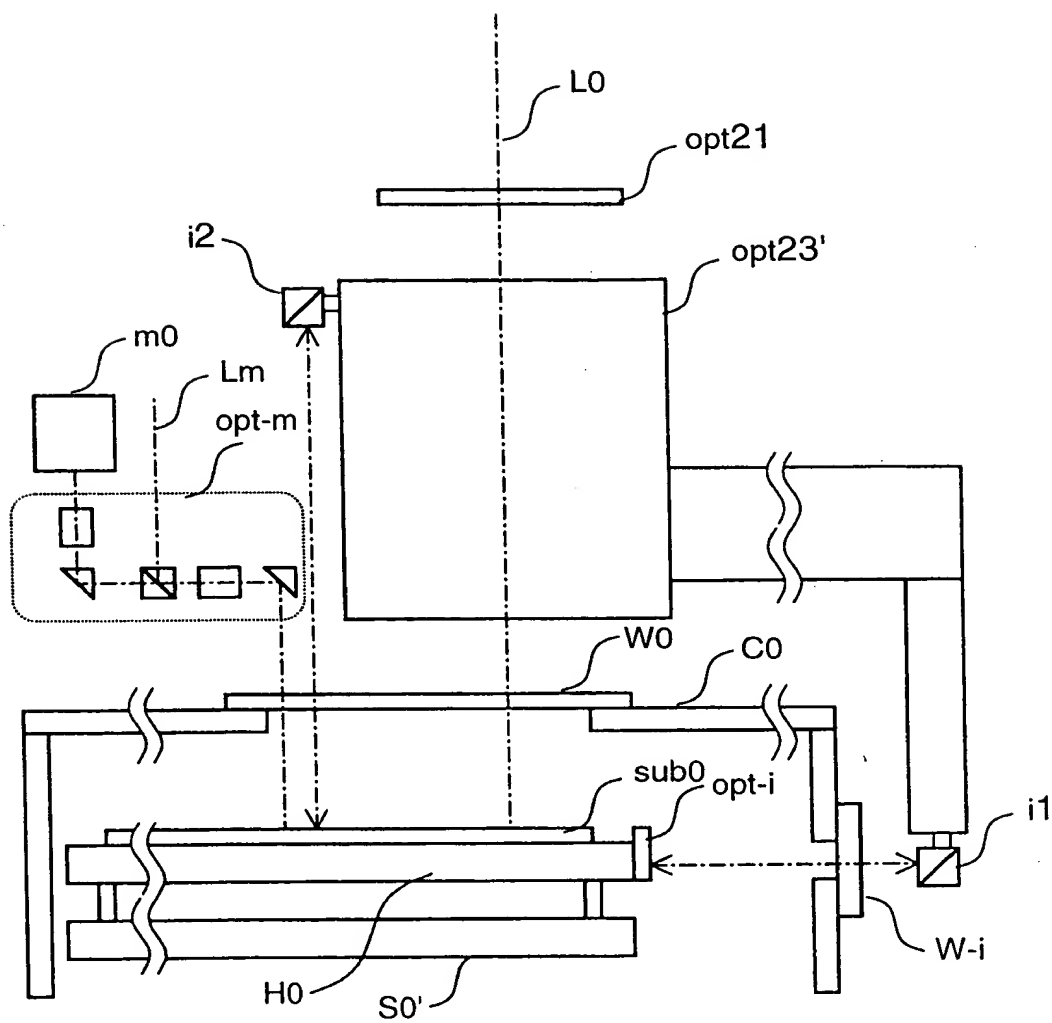


FIG.11





ALIGNMENT MECHANISM

FIG.12

FIG.13A  
MASK  
PATTERN

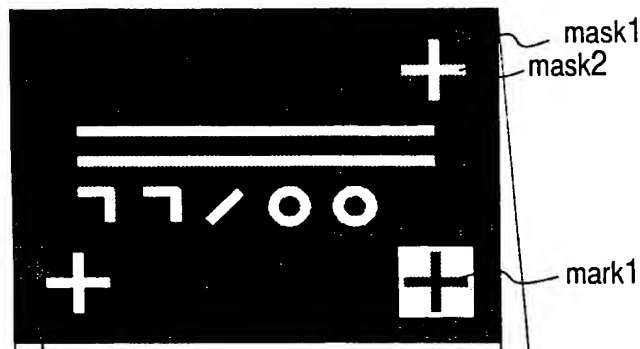


FIG.13B  
EXPOSURE  
PATTERN

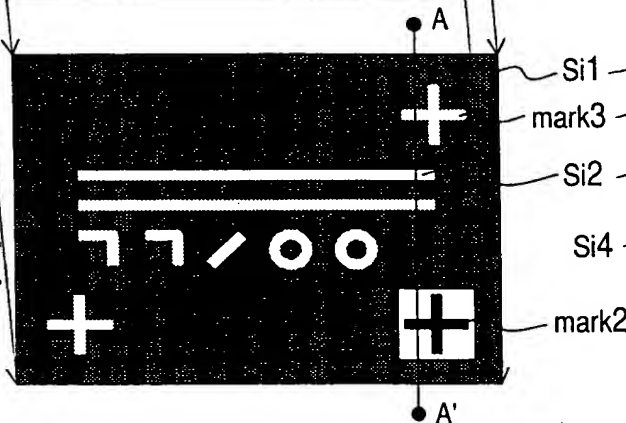
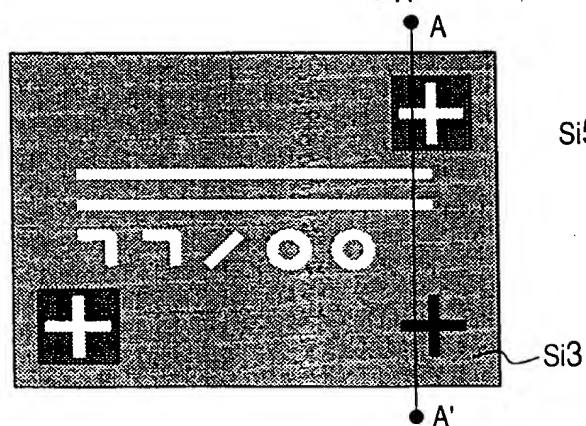


FIG.13D  
ETCHING  
PATTERN



A-A' CROSS SECTION

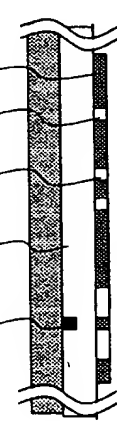


FIG.13C

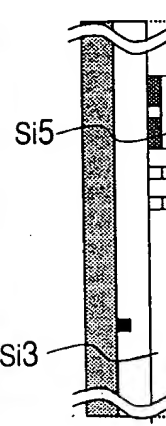


FIG.13E

PATTERN TRANSFER AND ALIGNMENT IN  
EXCIMER LASER ANNEALING

[illegible]

## SUBSTRATE STAGE OPERATION

ON

OFF

## ALIGNMENT, FOCUSING AND OTHER PROCEDURES

ON

OFF

### LIGHT IRRADIATION ON SUBSTRATE

ON

OFF

FIG.14A

## ILLUSTRATIVE CONTROL PROCEDURE (2)

## SUBSTRATE STAGE OPERATION

ON

OFF

## ALIGNMENT, FOCUSING AND OTHER PROCEDURES

ONLY

OFF

## MASK STAGE OPERATION

ON

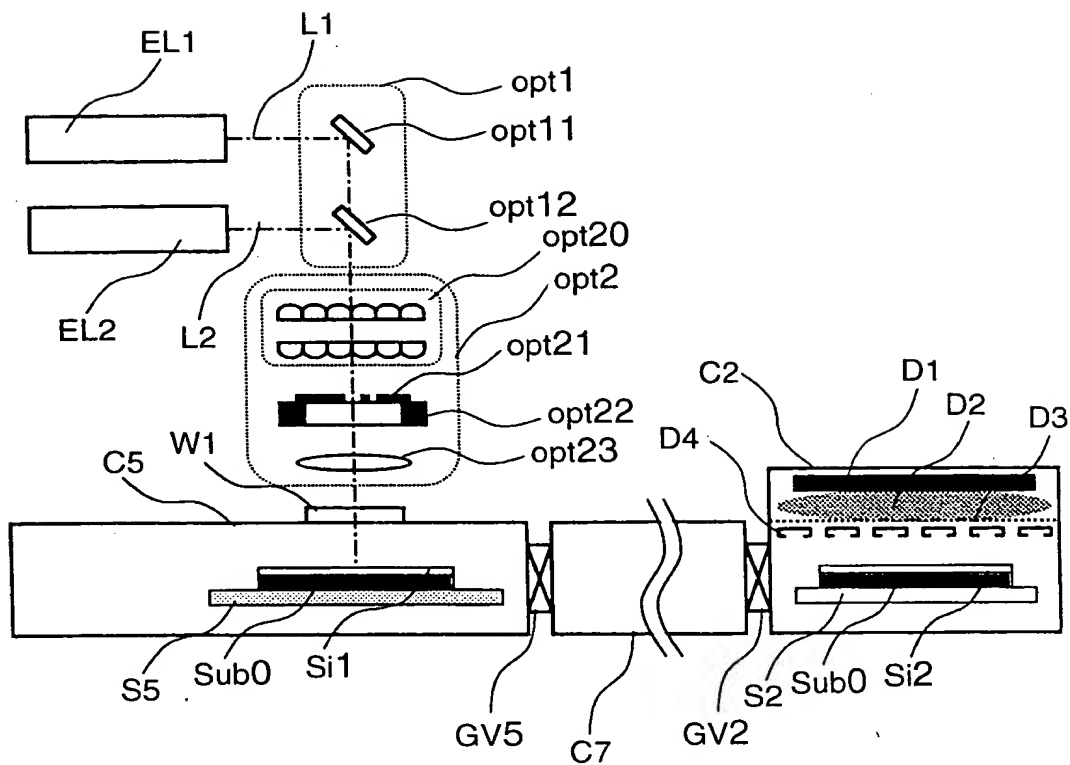
OFF

### LIGHT IRRADIATION ON SUBSTRATE

ON

OFF

FIG. 14B



PLASMA-ENHANCED CVD CHAMBER-SUBSTRATE TRANSFER  
CHAMBER-LASER IRRADIATING CHAMBER

FIG.15

The diagram illustrates a complex gas processing system. At the center is a chamber labeled C7, which is connected to seven peripheral chambers: C1, C2, C3, C4, C5, and C6. Each peripheral chamber is equipped with a gas valve (GV1 through GV7) that controls the flow of gas into or out of the central chamber. The system is further configured with various gas inlets (gas1 through gas7), vents (vent1 through vent7), and a series of sub-processors (sub1 through sub6). The gas flow is regulated by a network of pipes and valves, including a central valve assembly (C5) and a final output stage (W1) leading to a gas outlet (gas5). The system is designed to handle multiple gas streams simultaneously, allowing for precise control of the gas composition and flow rate within the central chamber C7.

FIG. 16

FIG. 17

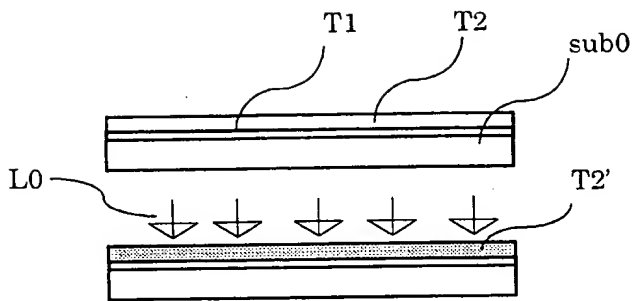


FIG. 18A

FIG. 18B

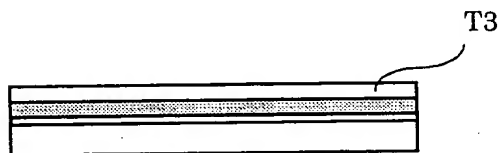


FIG. 18C



FIG. 18D

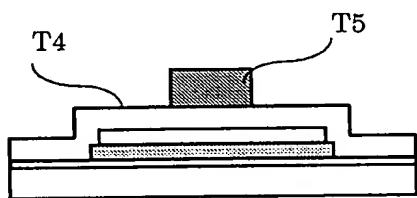


FIG. 18E

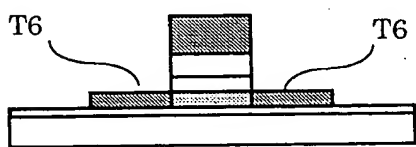


FIG. 18F1

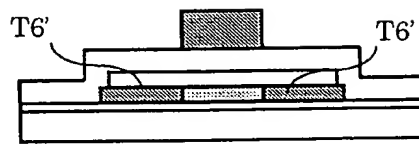


FIG. 18F2

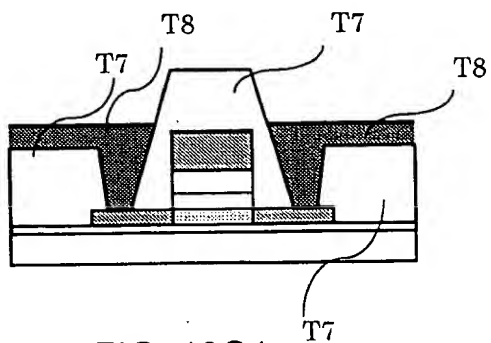


FIG. 18G1

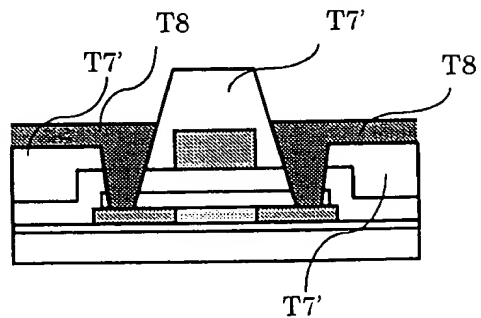


FIG. 18G2

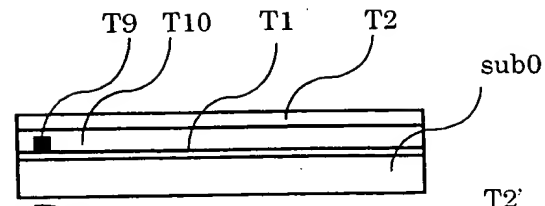


FIG. 19A

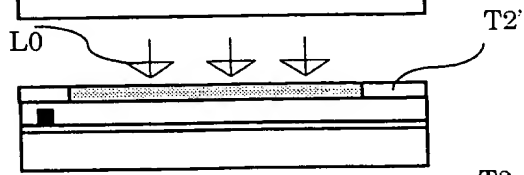


FIG. 19B

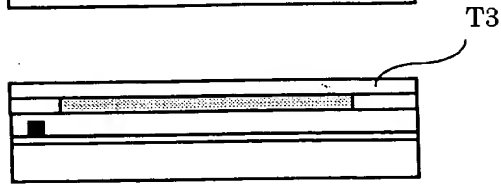


FIG. 19C

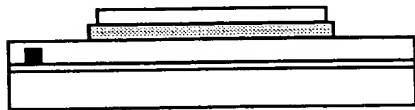


FIG. 19D

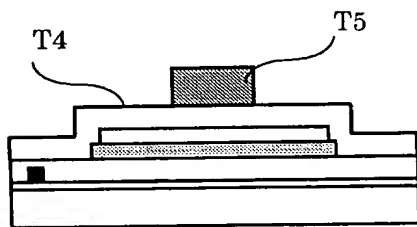


FIG. 19E

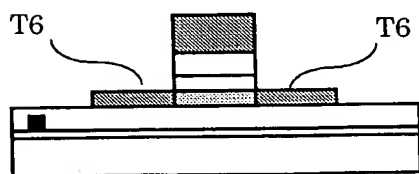


FIG. 19F1

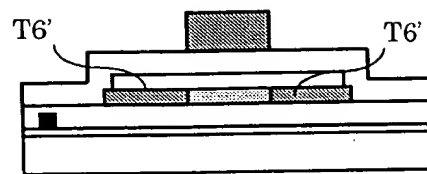


FIG. 19F2

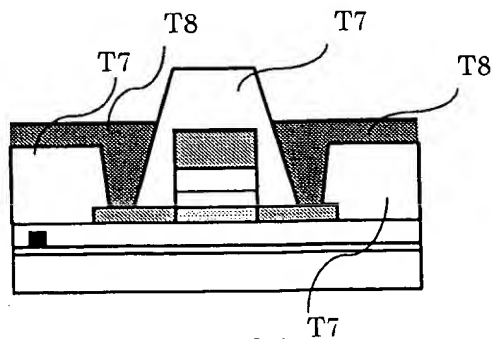


FIG. 19G1

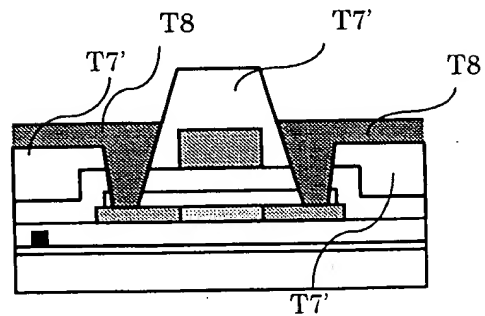


FIG. 19G2



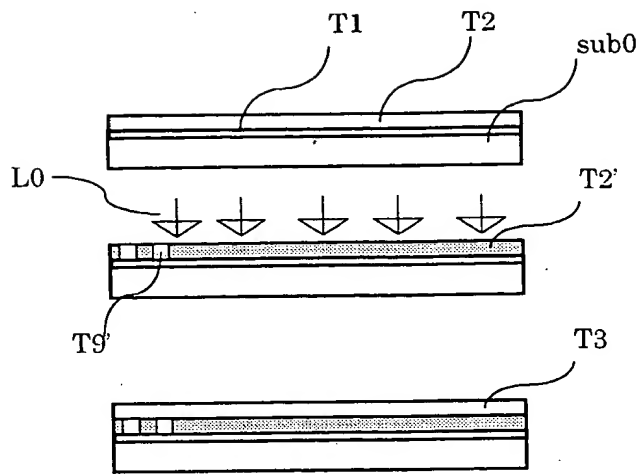


FIG. 20A

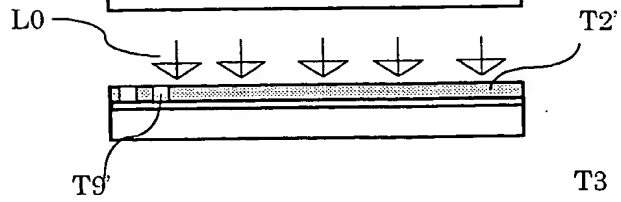


FIG. 20B

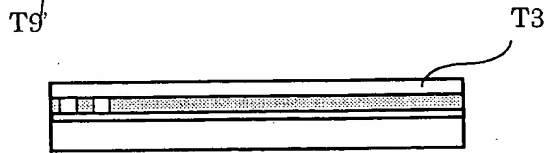


FIG. 20C



FIG. 20D

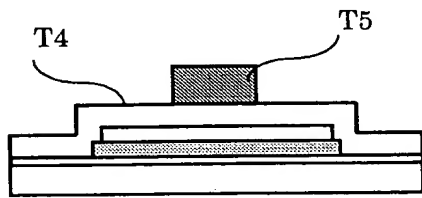


FIG. 20E

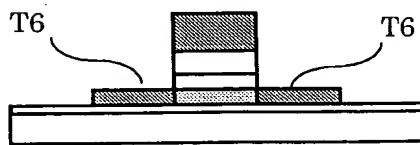


FIG. 20G1

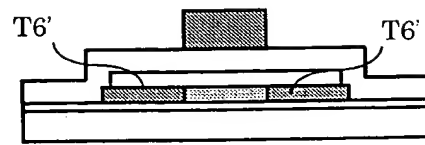


FIG. 20G2

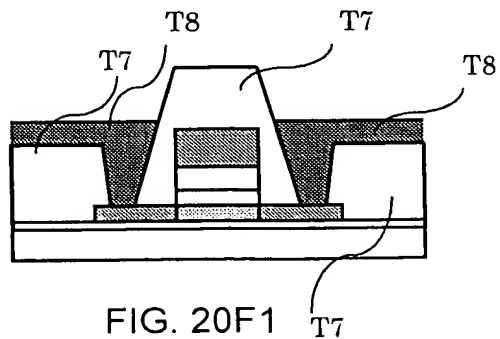


FIG. 20F1 T7

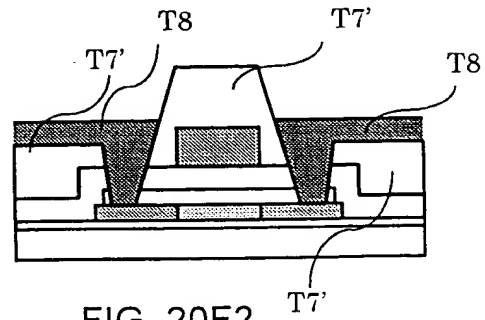


FIG. 20F2





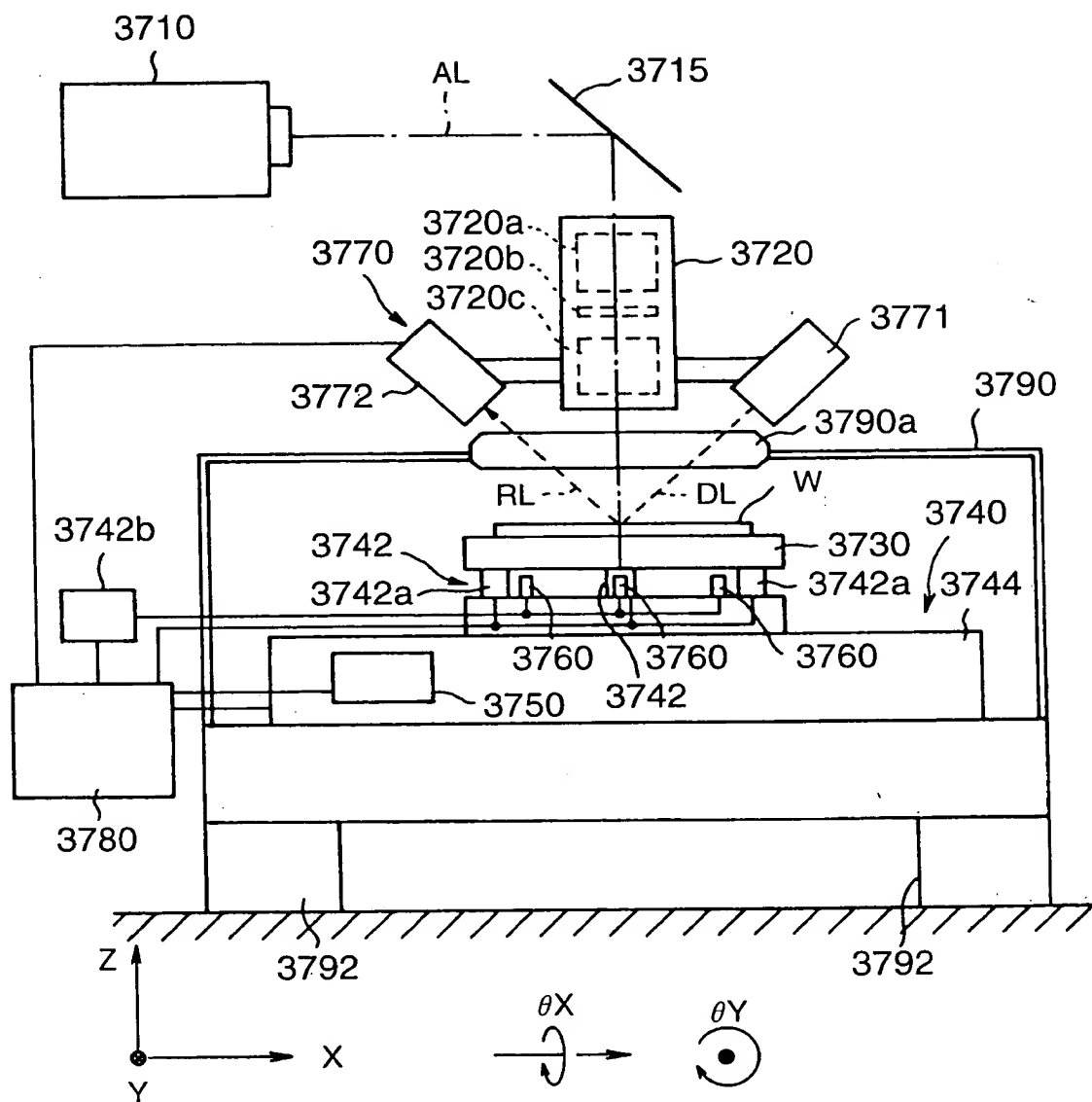


FIG.23

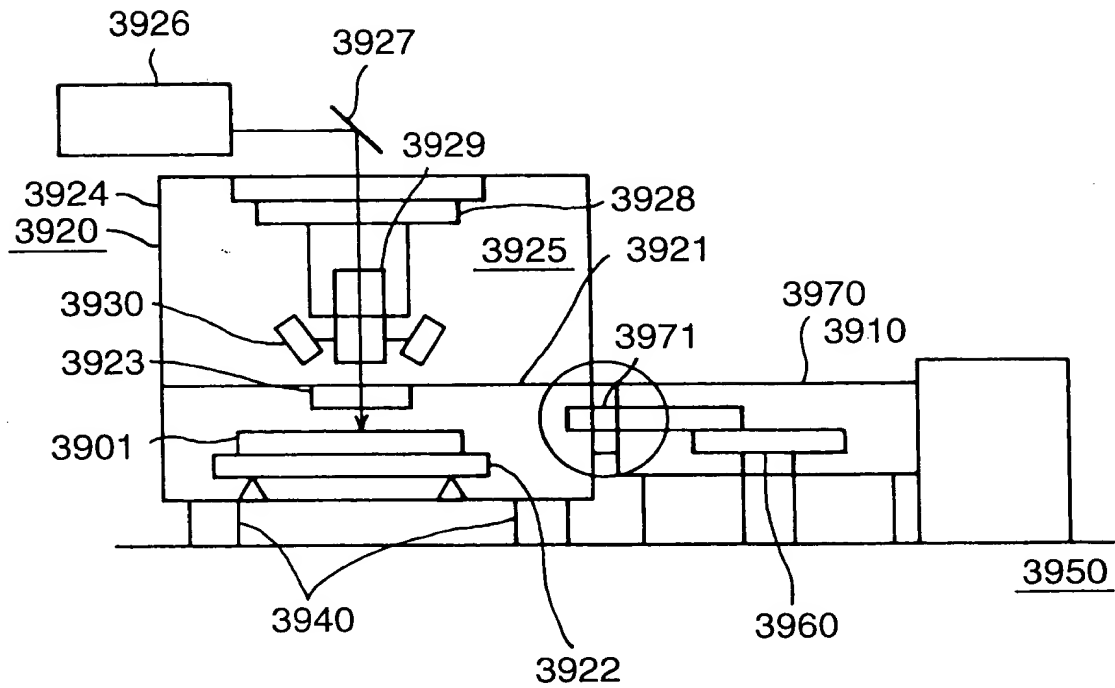


FIG.24

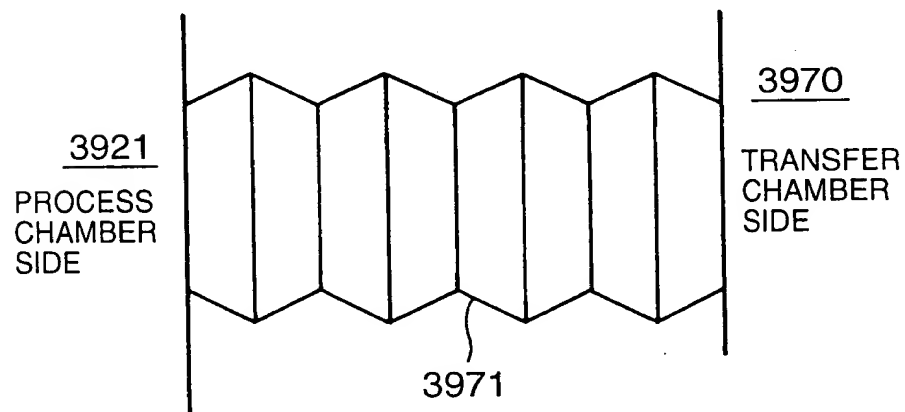
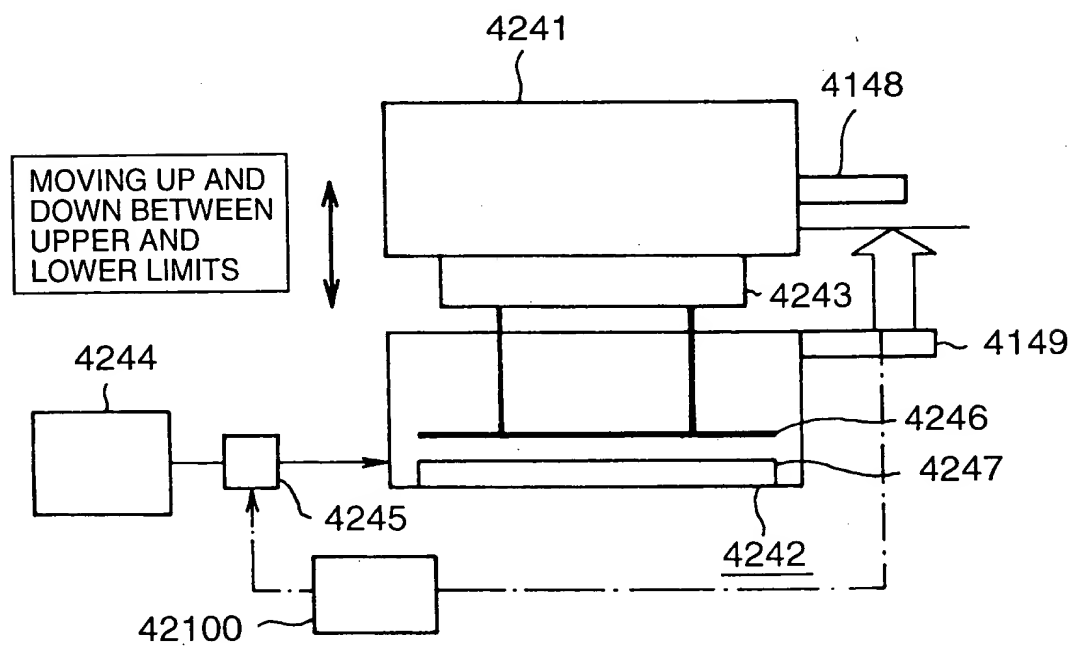
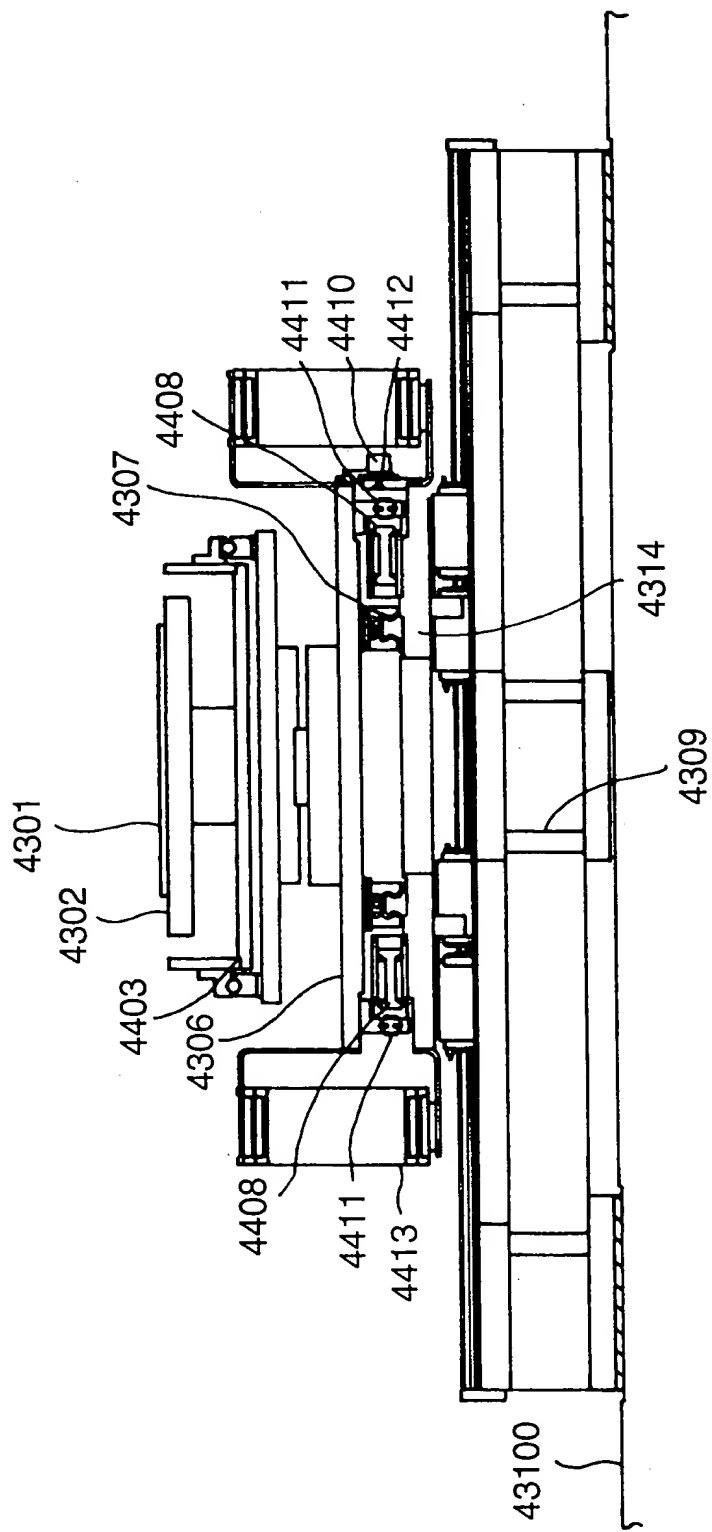


FIG.25







C-C

FIG.29



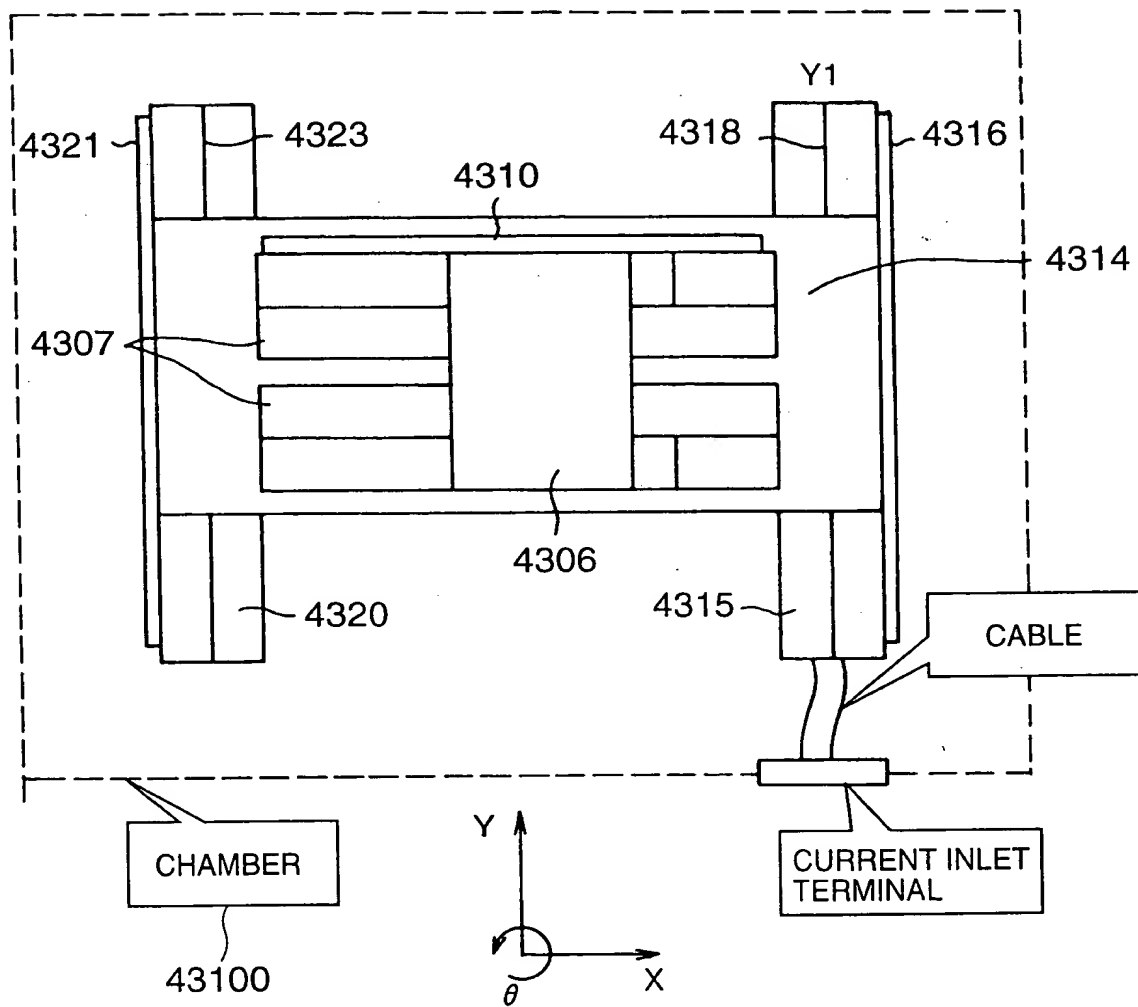


FIG.30

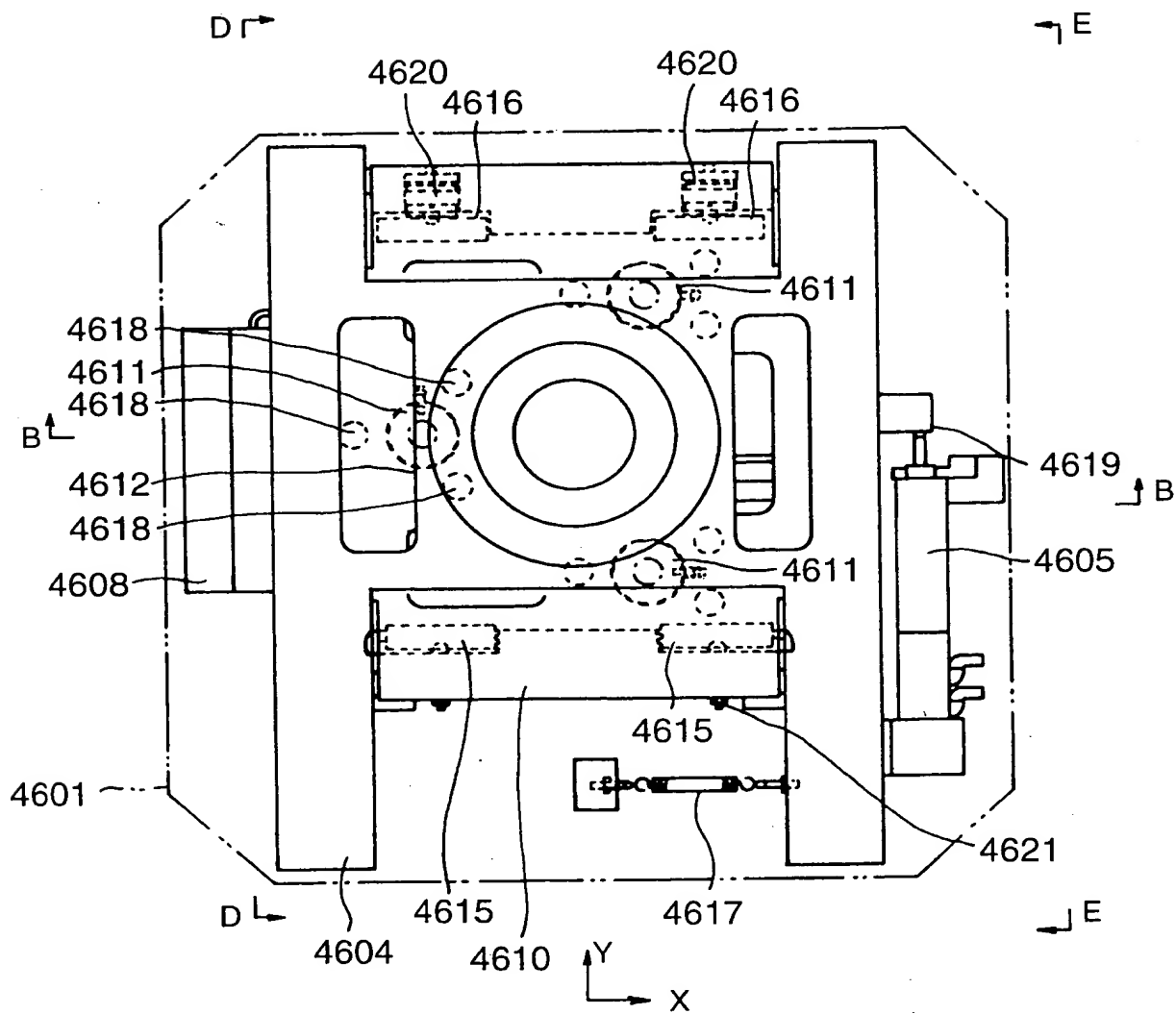


FIG.31



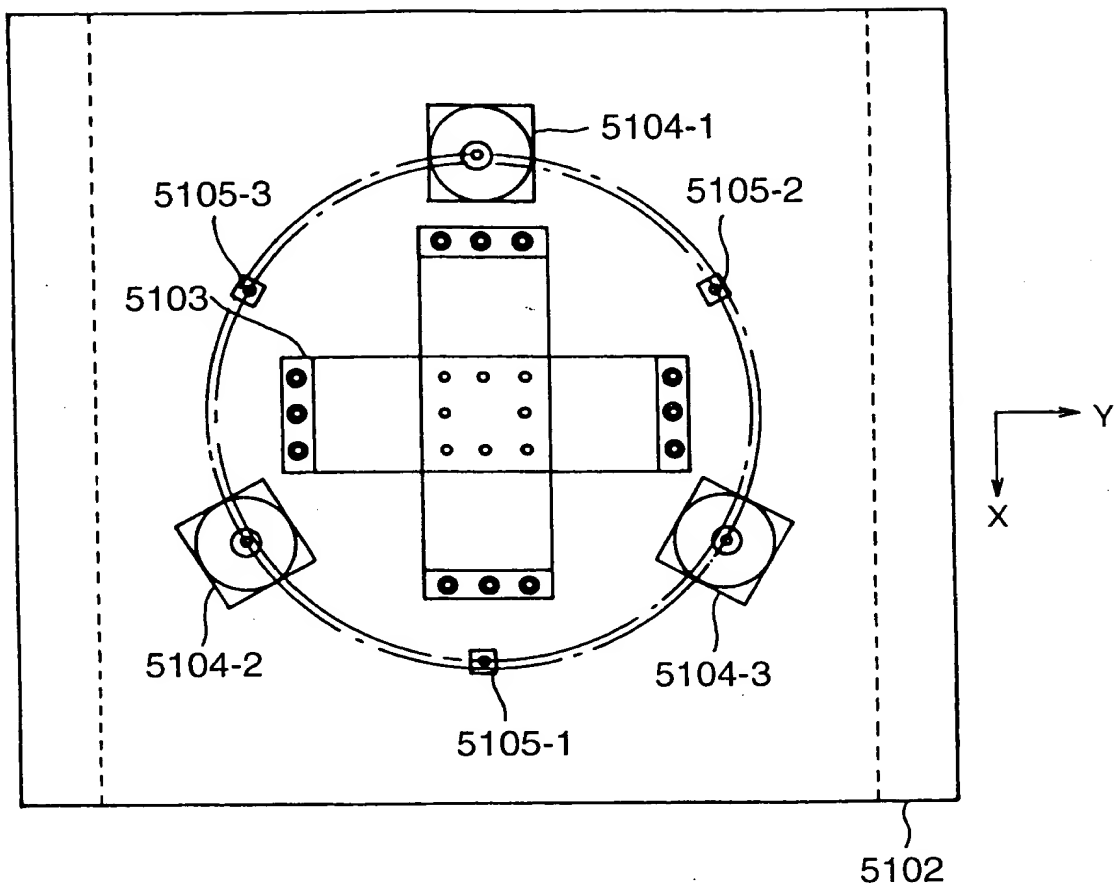


FIG.33

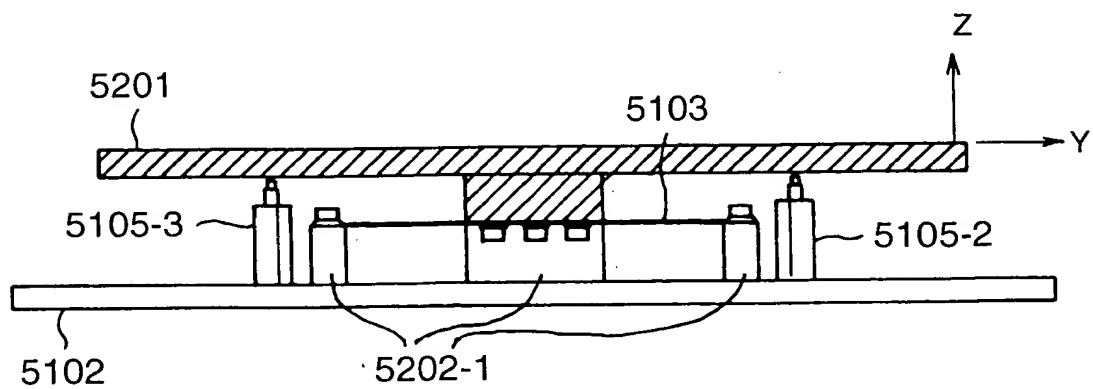


FIG.34

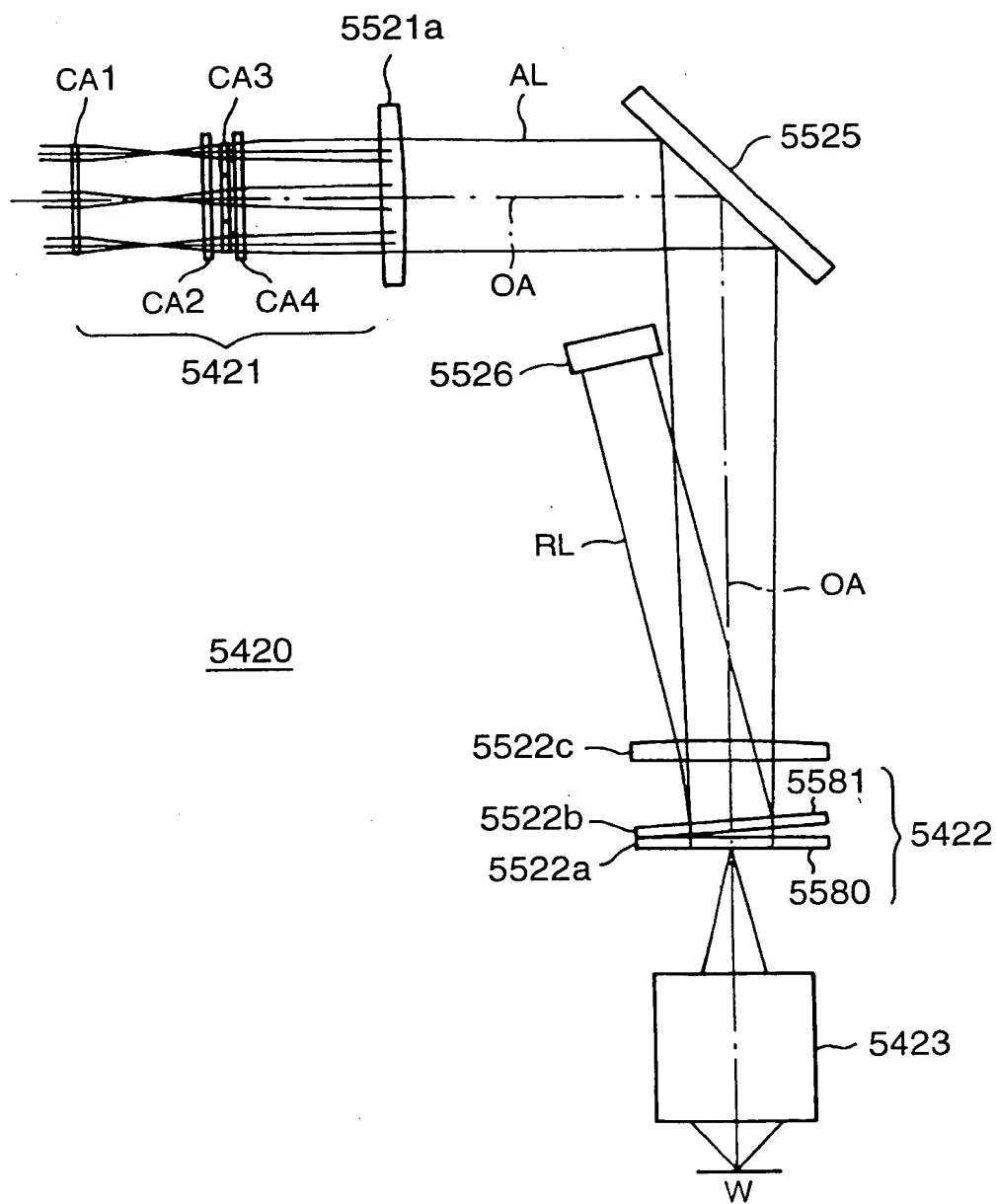


FIG.35

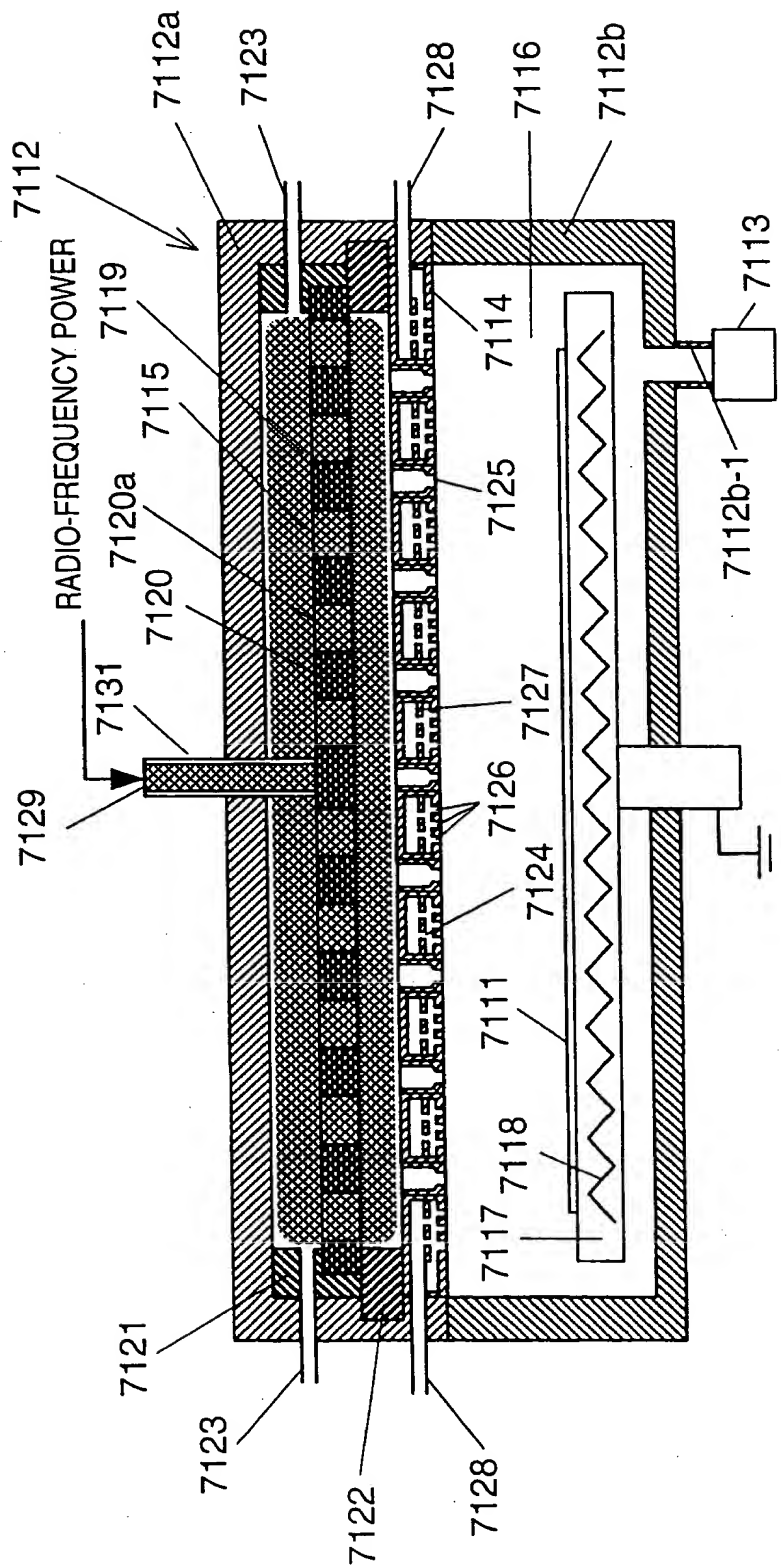


FIG.36

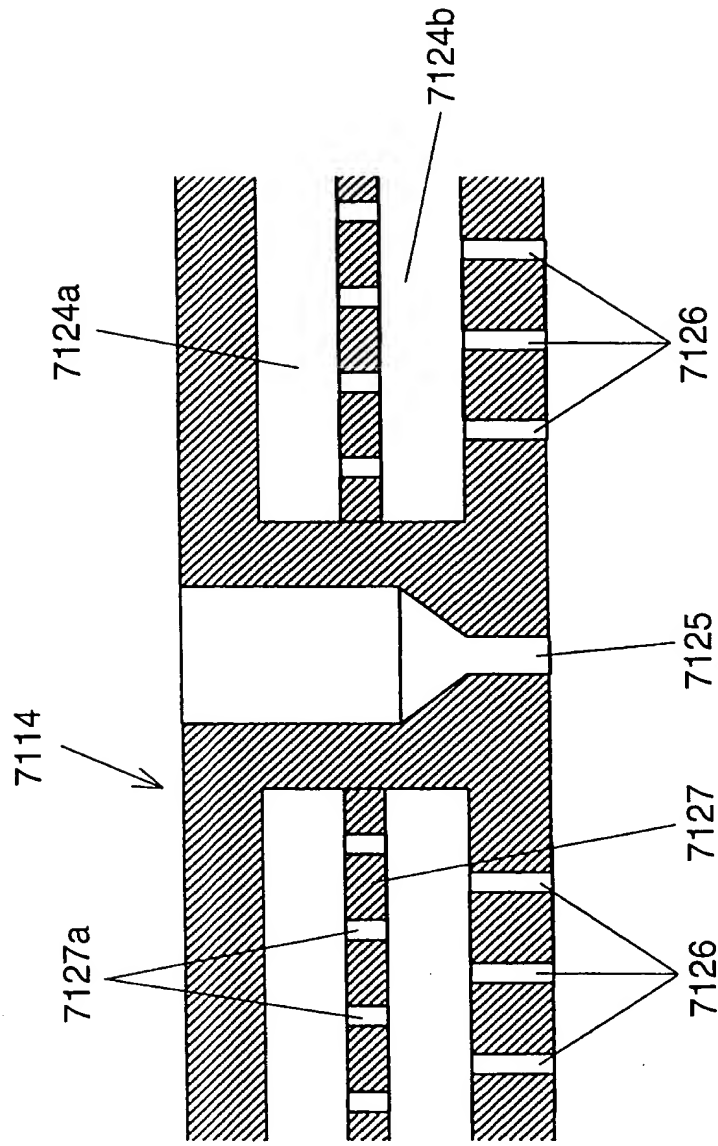


FIG.37

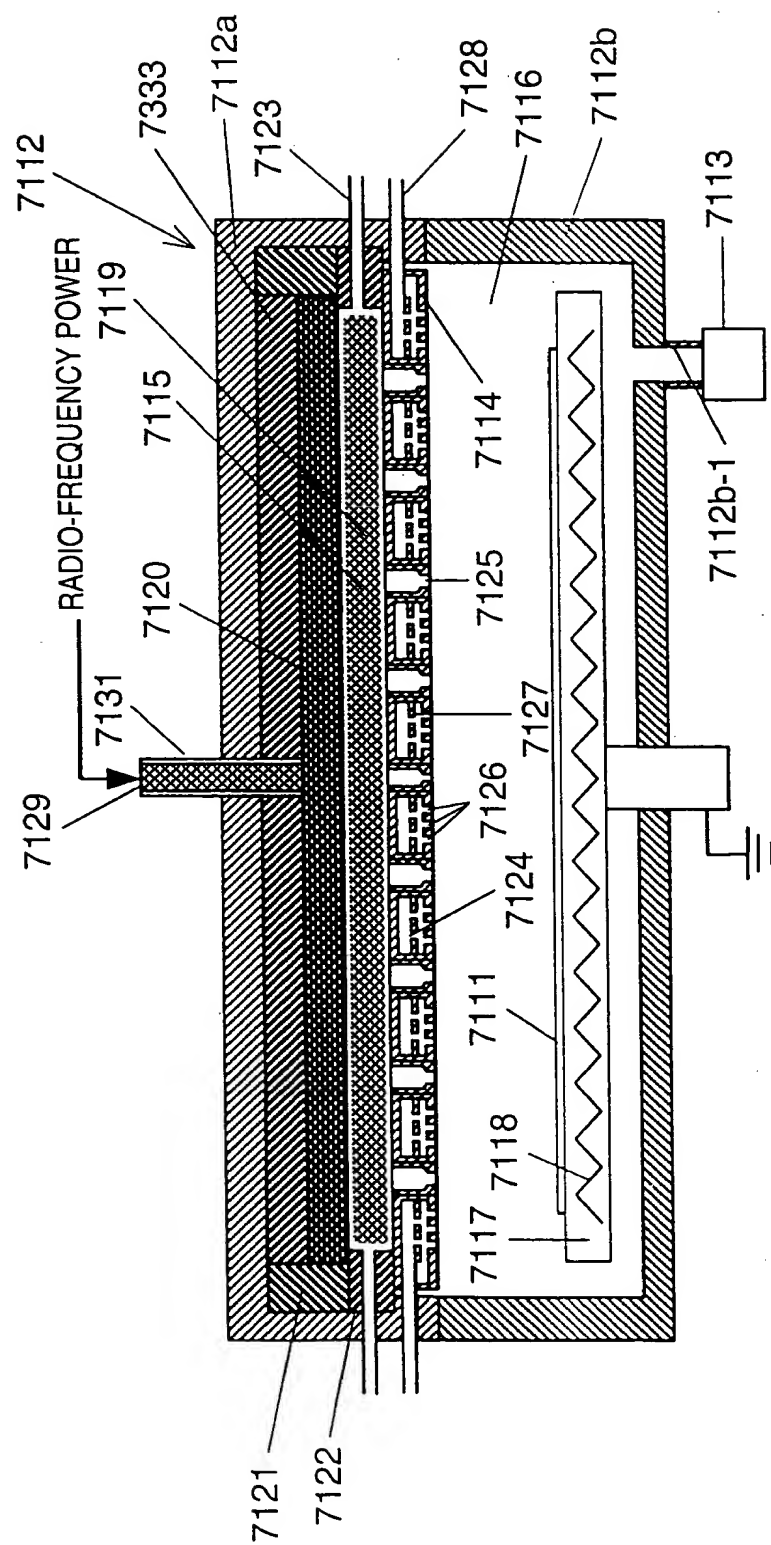


FIG. 38





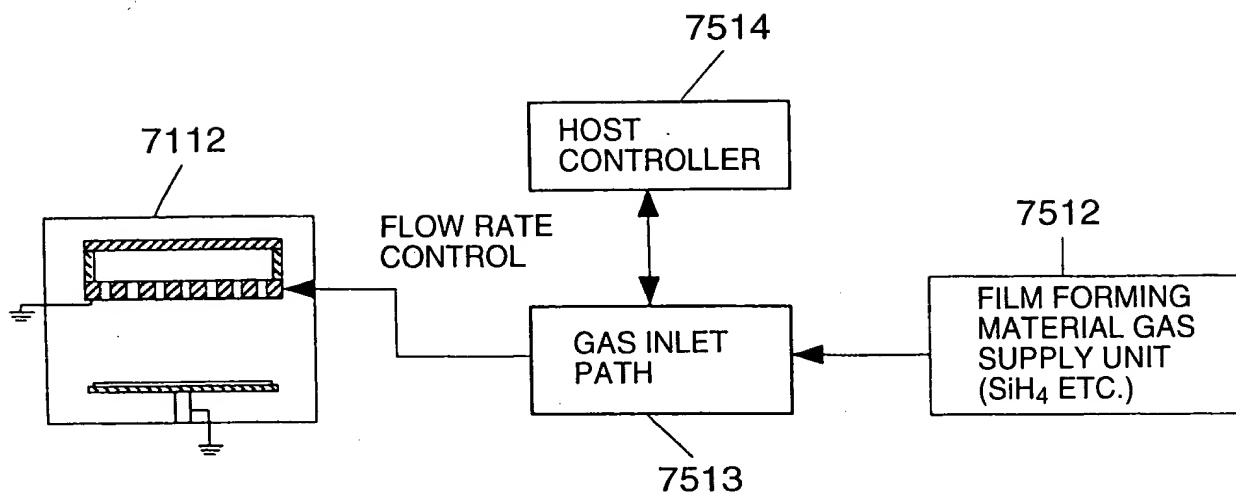


FIG.40

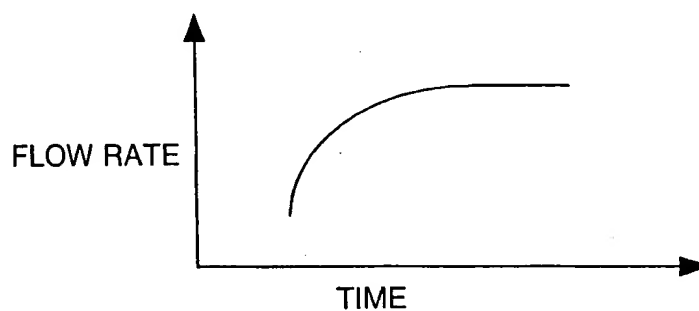


FIG.41

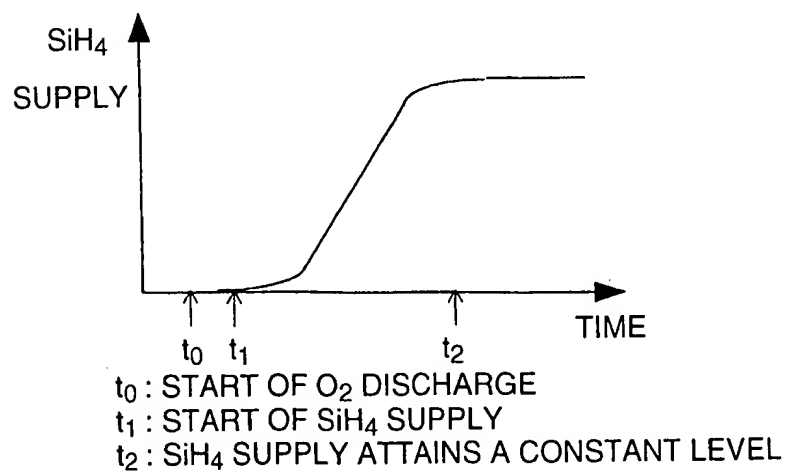


FIG.42



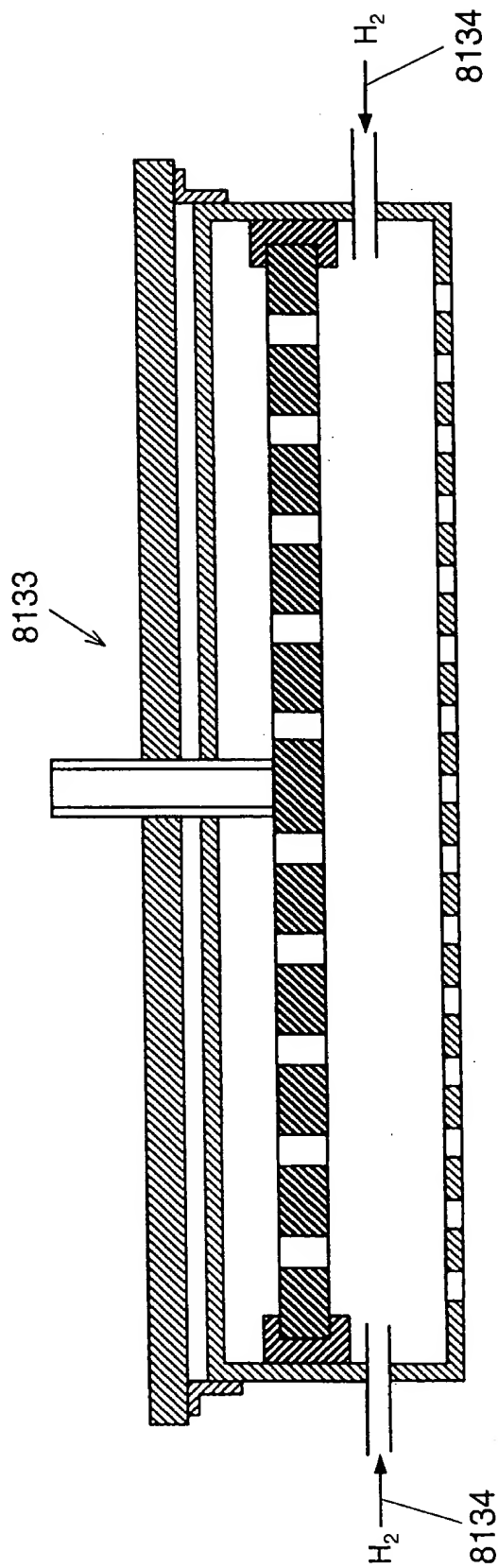


FIG.44

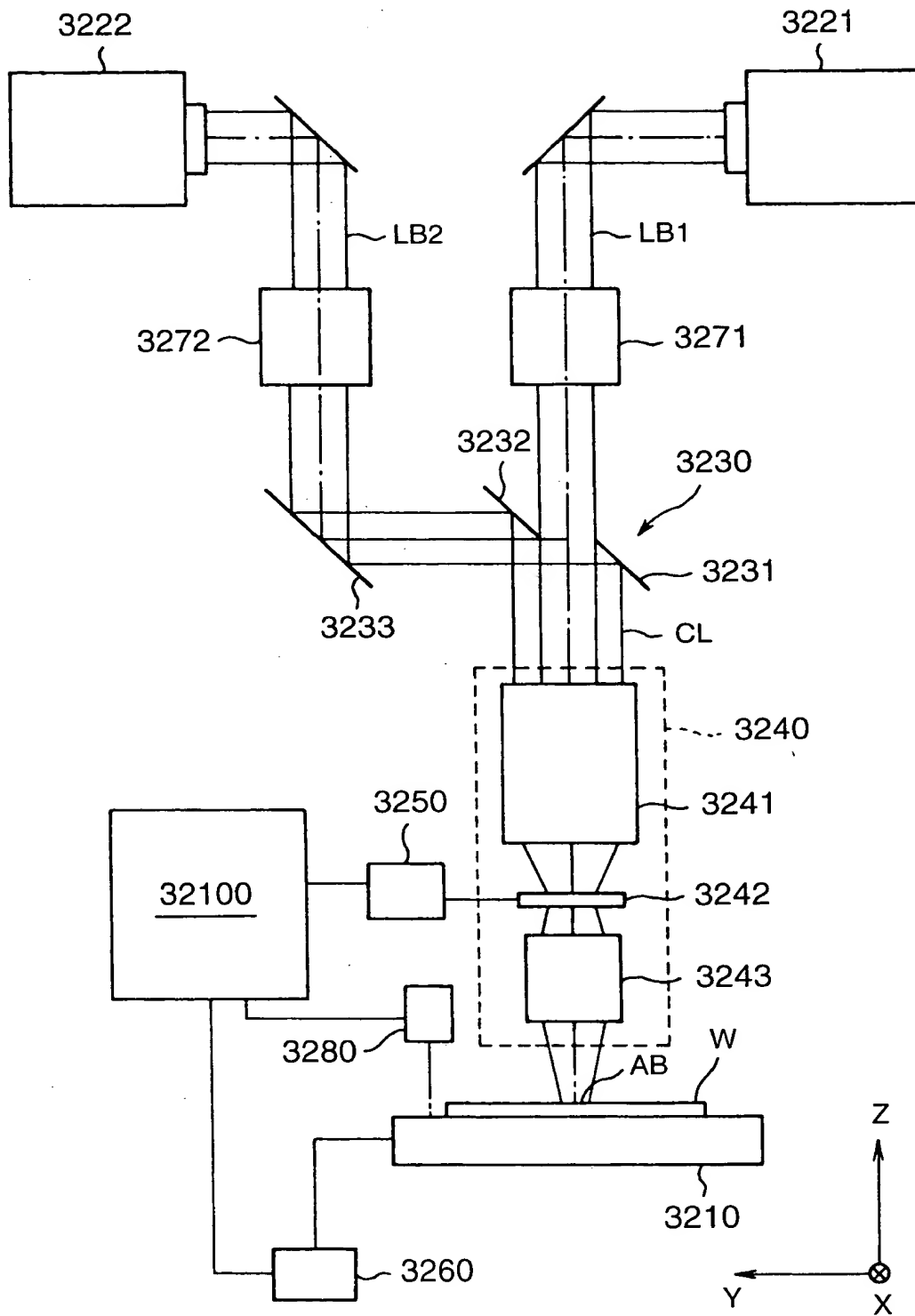


FIG.45

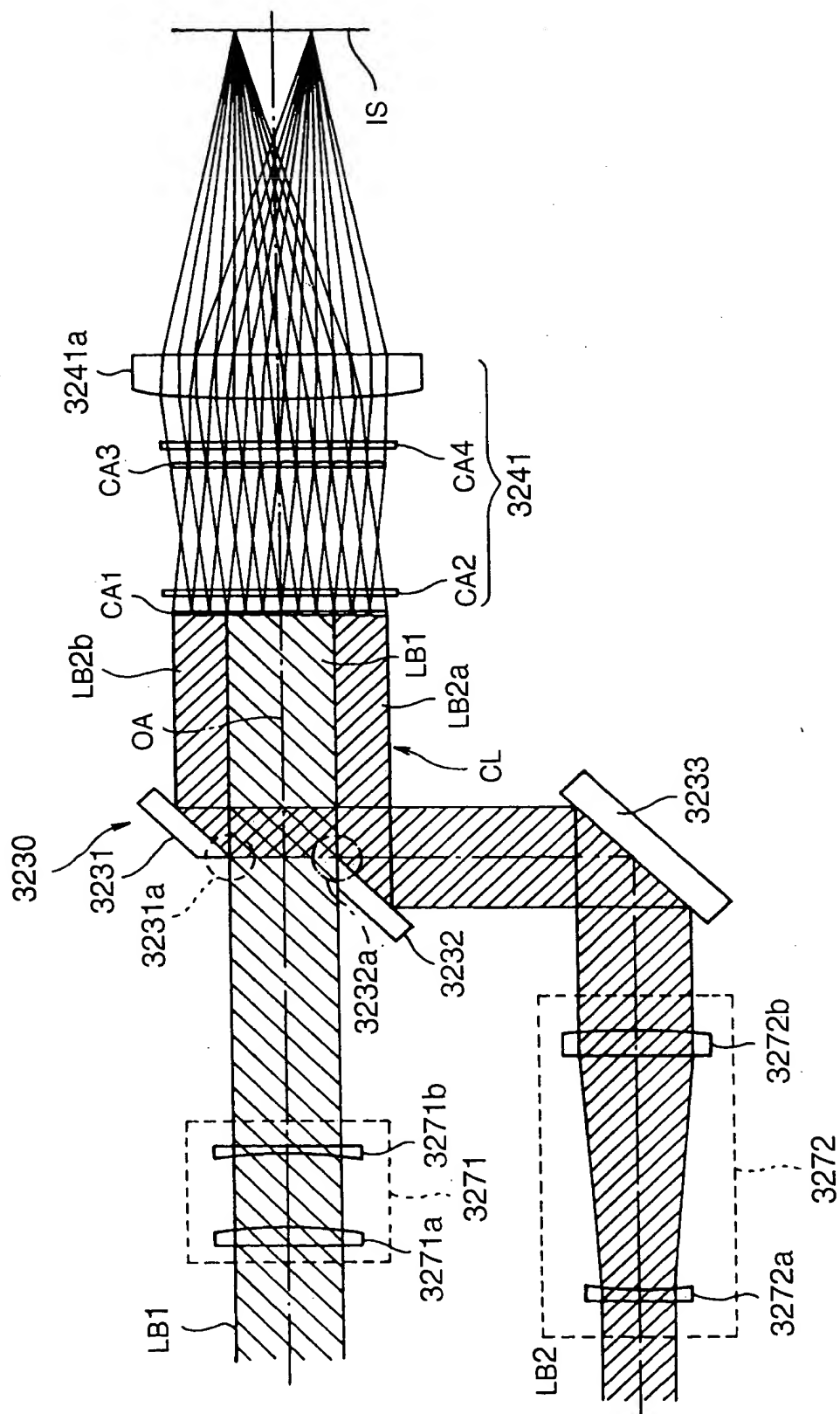


FIG. 46

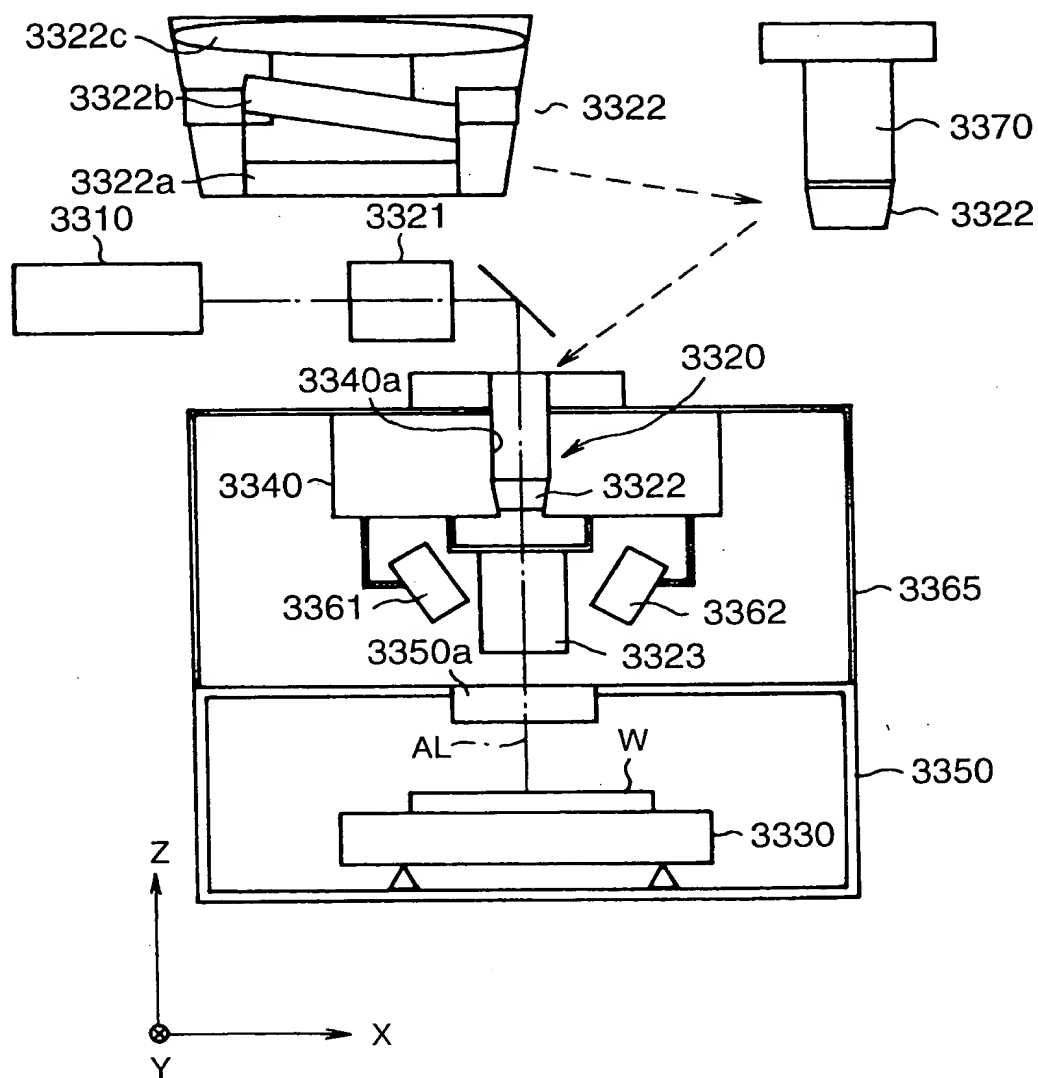


FIG.47

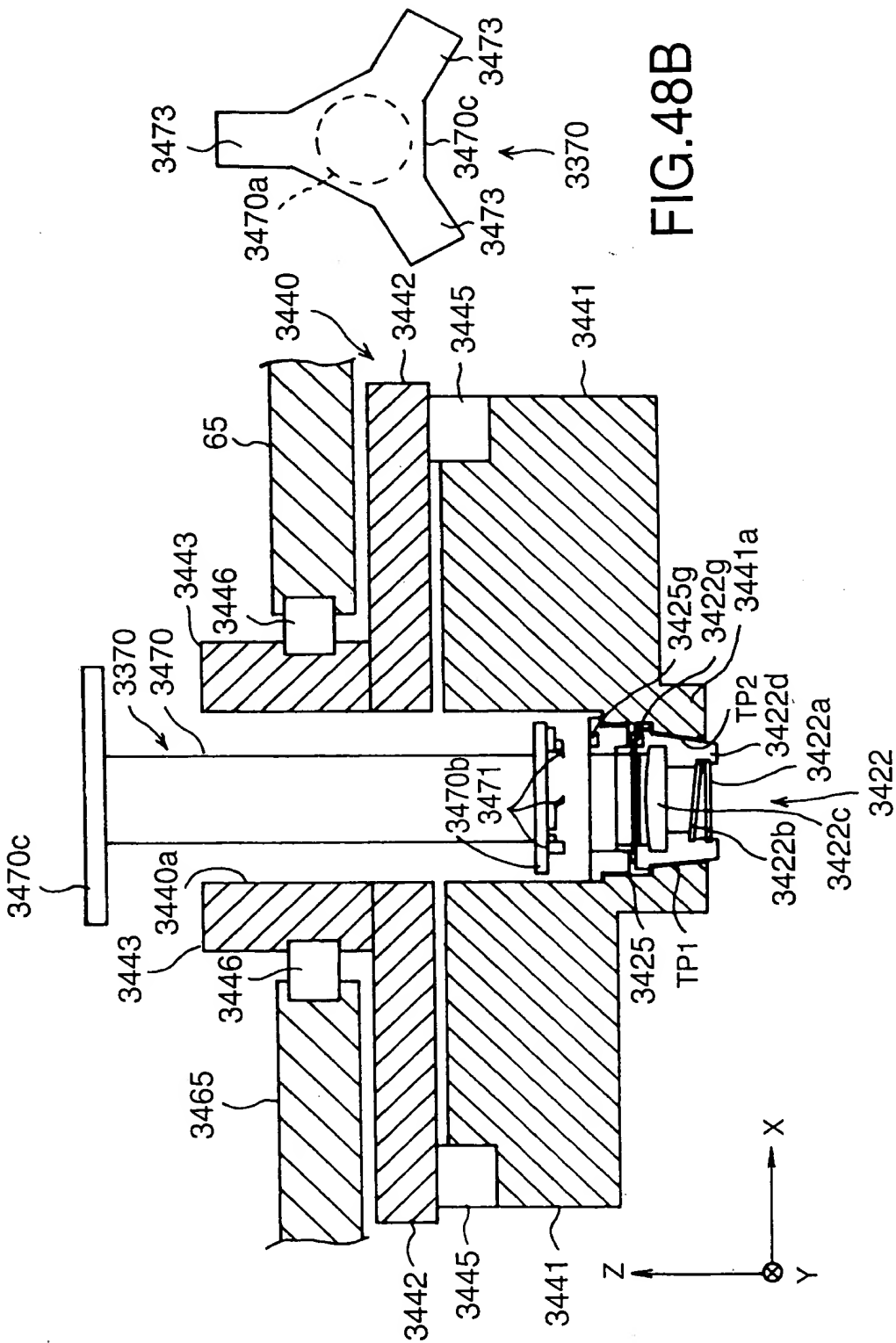


FIG. 48A



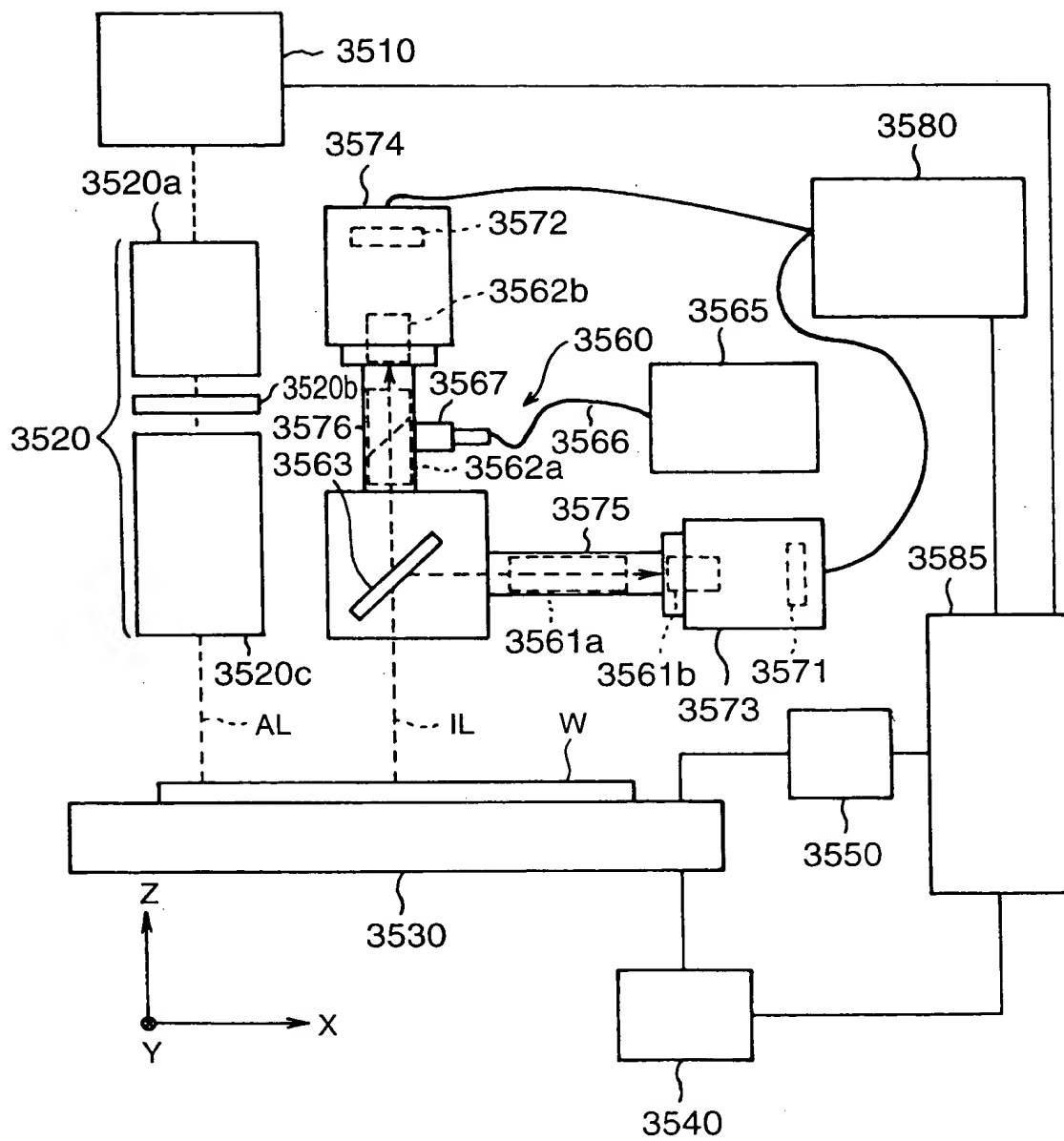


FIG.49

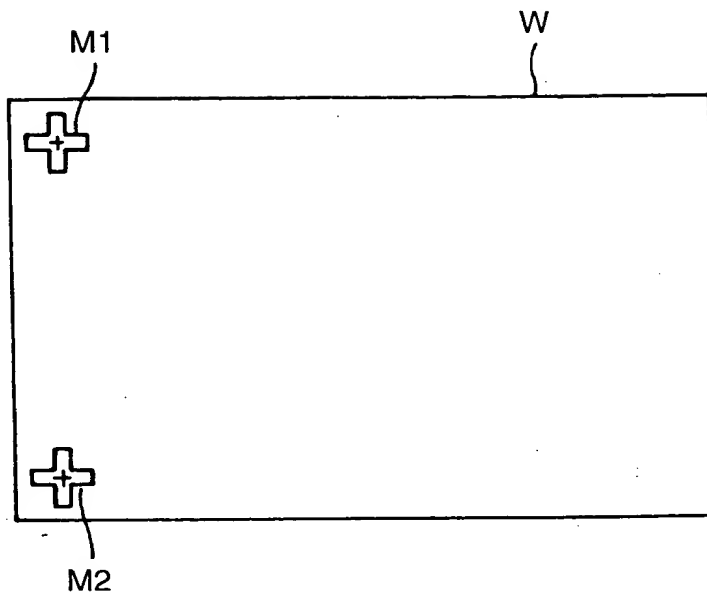
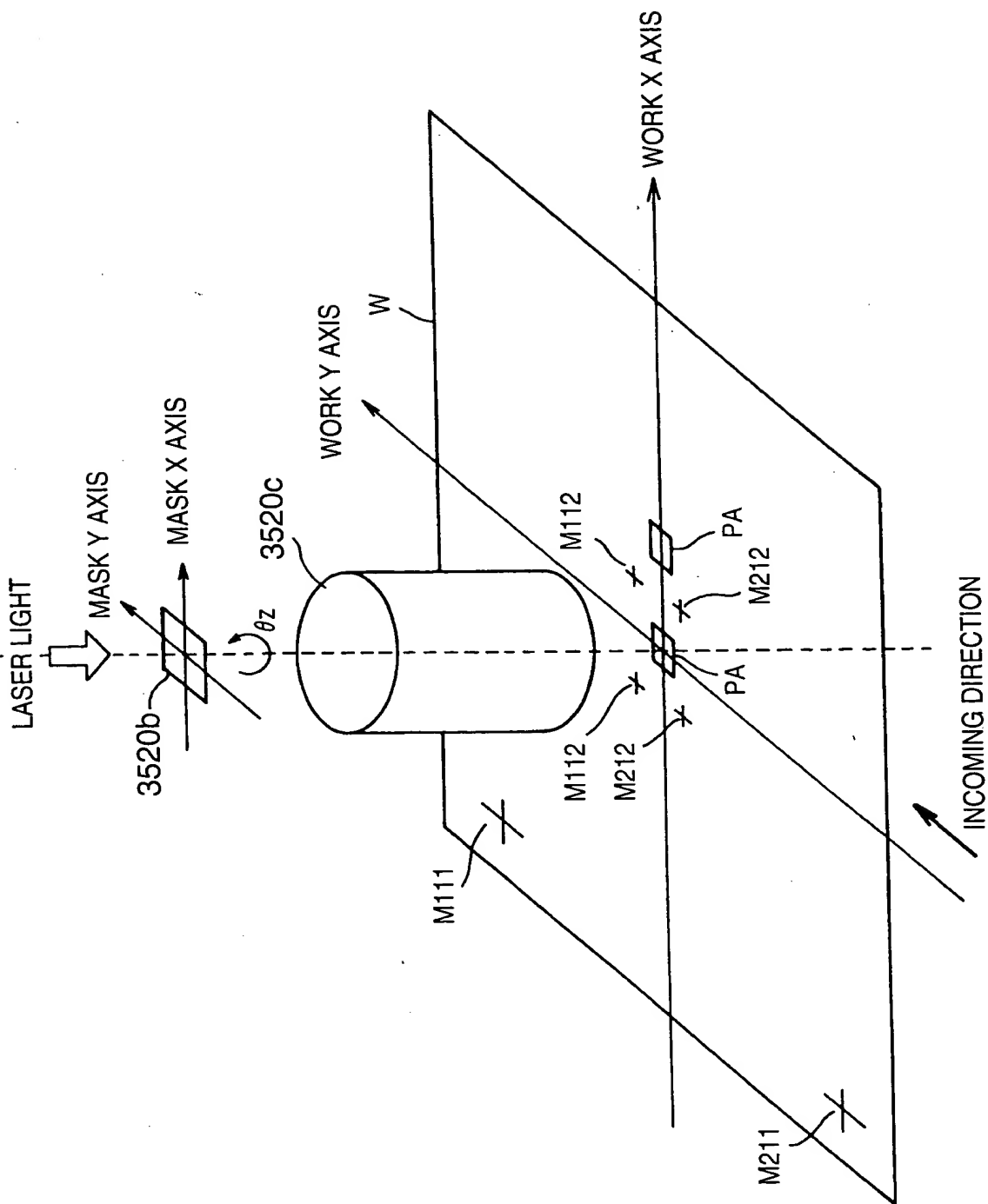


FIG.50

000000 15527900



**FIG. 51**

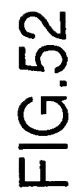


FIG. 52